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The Ohio State University

Fertility-Related Data in the 1982 National Longitudinal Surveys of Work Experience of Youth: An Evaluation of Data Quality and Some Preliminary Analytical Results

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Summary

This report evaluates the quality of the fertility-related data in the 1982 round of the National Longitudinal Survey of Work Experience of Youth and summarizes highlights of findings from these fertility data.

The evaluation indicates that the overall quality of the female live birth information is equivalent to that of the Current Population survey, that the abortion data is significantly under-reported, and that the other fertility-related information appears equivalent in quality to that of available data. The quality of the male birth records are inferior to those of the female respondents, and should be used with greater care by fertility researchers using this data set. The report specifies the potential magnitude of reporting errors, how these potential error levels are related to characteristics of the respondents, and the procedures used to clean up the fertility records.

The analytical sections of the report examine differentials in period and cohort birth rates, sexual activity and contraception, birth wantedness, and pregnancy outcome for selected respondent characteristics within cross-tabular and multivariate frameworks. Characteristics considered include race and ethnicity, religion, education, and various aspects of family stability, social class, and geographic residence. The multivariate results suggest the utility of a variety of background factors and more proximate respondent attitudes and behaviors for investigating a variety of adolescent and young adult fertility-related attitudes and behavior.

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I. INTRODUCTION

The 1982 round of the National Longitudinal Survey of Work Experience of Youth (hereafter termed the NLS) included a substantial battery of fertility-related data items collected under the auspices of the Behavioral Sciences Branch of the Center for Population Research of the National Institute of Child Health and Human Development. These included complete live birth histories for the 6084 young men in the survey and complete pregnancy histories for their 6040 female counterparts. In addition, information on current sexual activity and contraceptive use, fertility intentions, and child care was collected for respondents of both sexes. For the female respondents only, retrospective information on contraceptive use and whether or not each pregnancy was wanted was collected for all prior pregnancies.

This report, based on these data, has several objectives. The section which follows will briefly describe the data set, focusing on its utility for fertility research. The next section discusses the quality of the data, including procedures which were implemented to improve the internal consistency of the birth information. Subsequent sections will highlight some tabular and preliminary multivariate results. The intent of these sections is to provide potential data users with a variety of basic tabulations and descriptions of the fertility-related data. From a research perspective, this information should leave potential users in a better position to decide whether these data are appropriate for meeting their specific objectives. The multivariate results included in a final analytical section are included primarily to suggest potentially useful directions for further research.

II. THE DATA SET

The NLS is a nationally-representative longitudinal (panel) sample survey which included 12,686 respondents age 14 to 21 in the initial survey round in early 1979. As may be seen in Table 1, the sample includes approximately equal numbers of male and female youth and an over-representation of black, Hispanic and economically disadvantaged white youth so as to permit statistically reliable ethnic and racial comparisons. The original sample also included a special military supplement of about 800 men and 400 women in the service at the time. Appropriate weights are available so that the above population subgroups may be combined to provide overall national and regional population statistics. The respondents have been re-interviewed each year through 1983 and will be interviewed again at least in 1984 and 1985.

The data presented and evaluated in this report are from the 1982 survey round by which time the sample had reached ages 17 to 24 years. In the 1982 survey round, interviews with 12,124 of the original 12,686 respondents were completed. As may also be noted in Table 1, attrition from the original sample is under 5 percent, with little variation evidenced between the different racial and ethnic groups. In general, response rates to the specific questionnaire items, with the possible exception of the income data, are uniformly high. The data have been collected for the Ohio State University Center for Human Resource Research by the National Opinion Research Center at the University of Chicago.

In addition to the fertility data, the various survey rounds have on a continuing basis collected detailed information on a variety of topics including the respondent's education, training and employment experiences, income and asset information, other demographic behavior, self-reports on delinquent behavior, alcohol and drug use, attitudinal scales on self-esteem

Table 1 Interviews Completed in 1979 and 1982 by Race and Sex

	1979			1982					
Race	Total	Male	Female	Total	Attrition rate	Males	Attrition rate	Females	Attrition rate
Total	12686	6398	6288	12124	4.4	6084	4.9	6040	3.9
White	7510	3793	3717	7188	4.3	3618	4.6	3570	4.0
Disadvantaged white	2044	947	1097	1940	5.1	903	4.6	1037	5.5
Hispanic	2002	999	1003	1882	6.0	934	6.5	948	5.5
Black	3174	1606	1568	3054	3.8	1532	4.6	1522	2.9

and ideas about the appropriate roles for women. Virtually all respondents also completed the three-hour Armed Services Vocational Aptitude Battery (ASVAB), and reports on the characteristics of their last high school attended were received from the high schools of about three-quarters of the sample. All the data collected through the 1982 fourth round interview, along with accompanying documentation, are now available to the public for 400 dollars. Also, a more limited extract tape including the variables revised in our fertility data evaluation process described below, as well as a number of constructed fertility variables is now available. The variables on this extract tape are specified in an appendix to this report.

The NLS data set is described in somewhat greater detail in the 1983-1984 National Longitudinal Surveys Handbook, which is available gratis from the NLS User's Office at the Center for Human Resource Research, The Ohio State University, 5701 North High Street, Worthington, Ohio 43085.

The NLS data set has several major strengths for fertility-related analysis. Its national representativeness and over-representation of important minorities permit generalizable fertility analyses of the behavior patterns and attitudes of contemporary American youth--white, black and Hispanic. In addition, in-depth comparisons can be made between the behavior patterns of young men and women. Finally, the sample sizes are sufficiently large so that it is possible to compare population subgroups of young mothers and fathers with confidence that the subgroup statistics are nationally representative and that comparisons between these groups can be statistically meaningful. It may be seen in Table 2 that as of 1982 the NLS sample includes relatively large numbers of black, white and Hispanic mothers and fathers. Given the youthfulness of the sample, most of the children of the respondents are below school age and were low parity births. The vast majority of the

Table 2 Characteristics of Live Births by Race and Sex of Respondent
(Number of Sample Cases)

Categories	Hispanic males	Black males	White males	Hispanic females	Black females	White females
Age of children						
< 1	73	125	214	145	190	358
1	64	104	171	86	181	299
2	51	95	128	88	181	273
3	31	78	106	76	123	188
4	19	31	61	49	114	148
5	7	34	29	37	95	99
6	6	18	15	26	81	68
7	4	11	4	13	40	29
8	2	7	1	7	17	16
9	0	5	0	4	9	6
10+	0	2	0	0	3	2
Sex of children						
Male	134	267	373	287	541	742
Female	124	235	355	247	493	741
NA	0	12	10	0	0	0
Living arrangements of children						
In R's household - spouse present	159	135	519	337	256	1002
In R's household - spouse not present	27	41	35	172	702	384
With absent parents	65	309	146	5	10	22
With other relatives	1	15	7	9	36	14
Foster care	0	0	0	3	2	4
Adoptive parents	0	1	4	2	1	23
Long-term instit.	0	0	0	1	1	1
Away at school						
Deceased	2	2	10	4	26	30
Other	0	2	4	0	0	2
NA	5	6	11	0	2	10
Total children	256	506	734	533	1030	1481
Number of children by respondent						
No children	751	1169	3079	604	859	2539
1 child	126	247	374	203	396	678
2 children	44	89	130	103	189	271
3 children	9	16	29	28	56	66
4 children	3	7	3	9	18	12
5 children	1	2	-	1	4	3
6 children	-	-	-	-	-	-
7 children	-	-	-	-	-	1
NA	1	2	2	0	0	0
Total	258	511	733	534	1034	1488
Number of respondents with children	184	363	538	344	663	1031

children of the female respondents are living with their mothers but a significant number of the children of the male respondents are not present in the respondent's household. Table 3 provides some national statistics in this regard. It may be seen that 94 percent of the children of the female respondents are living with their mothers in comparison with 67 percent of the children to the male respondents. The male statistics vary considerably by race. For example, only about one third of the children of black male respondents are living with their fathers. As we will see, these variations have significant implications when judging the quality of the data which has been collected.

Over the next few survey years, the number of parents in the sample will grow substantially and the overall sample of parents and children will become increasingly representative of a broader spectrum of American parents and children. At this time, as subsequent analyses will show, the sample of parents includes disproportionate numbers of early childbearers, due to the fact that the oldest respondent in the sample now is only attaining 25 years of age. In particular, given the knowledge that men on the average begin childbearing at later ages than do women, the fathers represented in this sample are undoubtedly even more of a selected out population than are the women who have had children.

The very large numbers of young children and new parents also suggest the considerable utility of this data set for analyses focusing on maternal and child health issues, particularly as they relate to early childbearing. The 1983 and forthcoming 1984 survey include a substantial battery of questions on maternal care during pregnancy and child care immediately after birth. In conjunction with the data already available, it will then be possible to use this data set to develop national statistics on socioeconomic and racial

Table 3 Distribution of NLS Children by Parental Residence Status, Marital Status, Race and Sex

(Numbers in thousands)

	Total		White		Hispanic		Black	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Children of female respondents	6383	10.0	4395	100.0	639	100.0	1608	100.0
Living with mother	6015	94.2	4168	94.8	609	95.3	1499	93.2
Mother never married	1333	20.9	341	7.8	113	17.7	872	54.2
Mother spouse present[b]	4009	62.8	3234	73.6	409	64.0	367	22.8
Mother sep/wid/div	933	14.6	593	13.5	84	13.1	257	16.0
Not living with mother	368	5.8	227	5.2	30	4.7	109	6.8
Mother never married	156	2.4	70	1.6	15	2.3	71	4.4
Mother spouse present[b]	109	1.7	83	1.9	9	1.4	18	1.1
Mother sep/wid/div	102	1.6	73	1.7	5	0.8	20	1.2
Children of male respondents	3103	100.0	2062	100.0	285	100.0	756	100.0
Living with father	2084	67.2	1612	78.2	214	75.1	256	33.9
Father never married	124	4.0	47	2.3	20	7.0	54	7.1
Father spouse present[b]	1911	61.6	1537	74.5	183	64.2	188	24.9
Father sep/wid/div	51	1.6	30	1.5	9	3.2	12	1.6
Not living with father[a]	1019	32.8	450	21.8	71	24.9	500	66.1
Father never married	596	19.2	157	7.6	29	10.2	410	54.2
Father spouse present[b]	132	4.3	96	4.7	2	0.7	34	4.5
Father sep/wid/div	292	9.4	197	9.6	41	14.4	52	6.9

[a] The vast majority are living with the mother.

[b] Spouse of parent is not necessarily the child's parent.

differentials in maternal and infant health care and their short-run social and demographic consequences.

III. FERTILITY DATA EVALUATION*

Two types of quality evaluation procedures were carried out in evaluating the NLS fertility histories. First, because live birth information for all births which occurred before the 1981 interview have been reported on more than once (either 1979, 1981 or 1981 and 1982), it was possible to reconcile discrepant reports across surveys for a substantial proportion of all discrepant reports, as will be detailed below. This resolution formed the basis for most of the birth history data cleanup we were able to complete. The revised variables on the fertility extract tape prepared for NICHD were revised on the basis of these procedures.

Following these internal data consistency checks, a series of external data comparisons were carried out; these comparisons will be described in detail throughout this report. Period and cohort birth statistics were compared with appropriate Current Population Survey data. Data on pregnancies not resulting in a live birth were compared with national abortion statistics from the National Center for Health Statistics and with appropriate data from the teenage fertility studies carried out by Melvin Zelnik and John Kantner. Also, fertility expectation data and data on contraceptive use have been compared with other appropriate data sources.

A. Evaluation of Mothers' Birth Records

In the initial survey year, 1979, all of the respondents were asked to indicate the dates of birth (month-day-year) of any children who had been born live to them. The 1980 and 1981 surveys updated the birth records by asking about children born since the preceding survey. Finally, the 1982 survey collected from all of the female respondents a complete pregnancy history including the dates of birth of all live births as well as the date of termination (and length of gestation) for all pregnancies which did not result in a live birth. It is important to emphasize that this information was collected independently of the birth information collected in the preceding three surveys. That is, there were no cross-survey probes designed to elicit information about the reasons for any inconsistencies between information collected in the 1979-1981 and 1982 survey rounds.

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*The author is particularly grateful to R. Jean Haurin for her substantial assistance with the evaluation analysis.

In addition to the birth date information in the 1982 survey, supplementary information on the sex and residence of all live births (including date of death for infants who died) was collected. Also, in each survey, household record data including the sex and age of all the respondents' own children in the household was collected, independent of the information collected in the fertility record.

The above information has permitted two basic internal consistency checks of the NLS birth history records; namely, (1) consistency of dates of births of identical children born prior to the 1981 interview date as reported in the 1982 interview and in either the 1979, 1980 or 1981 interview and (2) consistency in the reporting of children ever born (including the appearance or non-appearance of specific births) between the 1982 birth record and the 1979-1981 birth records. Essentially, then, internal reporting inconsistencies considered in this evaluation include examination of discrepancies in dates of birth (month and year only) between the earlier and later records, the appearance of pre-1981 births in the 1982 records which had not previously been reported between 1979 and 1981 and the non-appearance in the 1982 birth history of births which had been reported earlier.

A computerized comparison of the 1982 with the earlier records identified 228 female respondents as having at least one mis-match of the above types in their birth record--representing 14.4 percent of birth records for the women who were reported as ever having borne a child by 1981. As may be seen in Tables 4 through 6 (the "before" statistics for mothers), the largest part of these record discrepancies were dating mismatches between an earlier and later record and only a small percent a discrepancy between reports in the actual number of children ever born. In addition, the vast majority of the misreports were by mothers who were living with their children. However, the likelihood of a misreport is much greater where the child is not living with the mother.

The overall discrepancy rates for mothers (in Table 5) show no significant overall difference by race or marital status. This overall similarity, however, disguises major discrepancies which appear when the ethnic groups are stratified by marital status. In particular, black mothers who have never been married (the largest group) or who are currently married have discrepancy rates not dissimilar to the overall female discrepancy rate, but black women who are separated or divorced are much more likely to have a reporting error in their birth record.

The discrepancies in birth records can be due to any of several causes. First, they can reflect transcription or key punch errors in the actual process of transferring the raw data from the interview form to the computer tape. This error can be detected by an interview schedule check of those respondent records where a dating discrepancy between the earlier and later record is in evidence.

A second and major source of error is where the respondent reports different dates for a particular child on two different interviews. As will

Table 4 Number of Discrepant Reports in Birth Records for Male and Female Respondents Before and After Data Cleanup by Child Household Status in 1982

	Respondent is Father						Respondent is Mother					
	Additional child reported in 1982		Children deleted in 1982		Dating discrepancy between reports		Additional child reported in 1982		Children deleted in 1982		Dating discrepancy between reports	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Child in household	37	14	13	11	69	22	24	6	7	3	143	29
Child with other parent only	67	59	9	7	82	34	1	0	0	0	6	0
Child with other relative	6	6	1	1	1	2	2	1	0	0	9	3
Child with adoptive parent	1	1	0	0	1	2	4	0	2	1	5	3
Deceased	2	0	0	0	2	2	9	0	0	0	6	2
Other	3	2	0	0	0	0	0	0	0	0	1	1
No children in household	0	0	42	38	0	0	0	0	10	5	0	0
Interviewer error	0	0	0	1	5	0	0	0	0	0	0	0
Total	116	82	65	58	160	62	40	7	19	9	169	38

NOTE: Child household status relates to status of respondents oldest child at 1982 interview. "Additional child" refers to child appearing in 1982 birth record which based on its age should also have appeared in an earlier record. "Deleted" children refer to children who should have appeared in the 1982 record as they had legitimately appeared in an earlier record. Dating discrepancy means that either month or year of birth differed between 1982 and at least one of the 1979-1981 records. Discrepant report response is so the respondent and not the birth-statistics specify the number of respondents who had at least one discrepant report in their birth records. In this record, a misreport on number of children takes precedence over a dating misreport, as it represents a more serious error.

Table 5 Reporting Discrepancy Rate Before and After Data Cleanup by 1982 Household Status, Marital Status and Race

	Respondent is Father								Respondent is Mother							
	Additional child reported in 1982		Children deleted in 1982		Dating discrepancy between reports		Total discrepancy rate		Additional child reported in 1982		Children deleted in 1982		Dating discrepancy between reports		Total discrepancy rate	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Household status of children																
Child in household	9.2	3.5	3.2	2.7	17.1	5.4	29.5	11.6	1.6	0.5	0.5	0.2	9.7	2.0	11.8	2.6
With other parent only	26.8	23.6	3.6	2.8	32.8	13.6	63.2	40.0	6.3[a]	0.0[a]	0.0[a]	0.0[a]	33.3[a]	0.0[a]	38.9[a]	0.0[a]
Other	66.7[a]	50.0[a]	5.6[ab]	5.6[ab]	22.2[a]	33.3[a]	94.4[a]	88.9[a]	17.6	1.2	14.1[b]	7.1[b]	24.7	10.6	56.5	18.8
Marital status																
Never married	30.4	25.3	16.1	16.6	29.5	12.9	76.0	54.8	3.7	0.4	1.6	1.0	10.6	3.3	15.9	4.7
Married spouse present	9.7	4.5	5.2	3.5	18.1	6.4	33.0	14.4	1.8	0.4	1.1	0.4	10.7	2.0	13.6	2.7
Other marital statuses	10.2	8.3	8.3	7.4	20.4	7.4	38.9	23.1	2.6	0.7	0.7	0.4	11.3	2.2	14.6	3.3
Race/Ethnicity																
Hispanic	7.3	2.4	4.1	4.1	26.8	11.4	38.2	17.9	2.0	0.8	1.6	0.8	12.0	3.2	15.5	4.8
Black	29.2	22.8	13.2	12.0	28.0	10.4	70.4	45.2	3.5	0.4	0.9	0.4	11.5	3.3	15.9	4.0
White	9.6	6.2	7.6	6.5	15.8	6.2	33.0	18.9	2.0	0.4	1.3	0.6	9.8	1.5	13.1	2.6

NOTE: See Table 4. Denominations for discrepancy rates are numbers of ever fathers or mothers as of 1981 survey but household/marital status is as of 1982 survey. This is because discrepancies can only be evaluated for births which occurred (or didn't occur) prior to 1981 surveys.

Table 6 Reporting Discrepancy Rate Before and After Data Cleanup by Race and Marital Status

	Respondent is Father						Respondent is Mother					
	Never married		Married spouse present		Other marital status		Never married		Married spouse present		Other marital status	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Hispanic	60.7 (28)	28.6	28.4 (74)	12.2	42.9* (21)	23.8	22.4 (58)	6.9	15.6 (154)	4.5	5.3 (38)	2.6
Black	78.9 (152)	57.2	58.9 (73)	23.3	52.0 (25)	36.0	14.4 (326)	3.4	14.1 (135)	3.7	28.7 (85)	7.1
White	75.7 (37)	64.9	27.0 (256)	12.5	32.3 (62)	16.1	16.8 (107)	7.5	12.9 (526)	1.9	11.2 (151)	1.3

NOTE: Sample sizes in parentheses. See Tables 4 and 5 for definitional notes.

be described below, in many instances errors of this type can be resolved given the considerable information on interview and birth dates, children ever born and ages of children from the birth and household records. However, in a fair proportion of these mismatches, the discrepancy cannot be resolved without an intensive followup interview probe with the respondent, something not feasible at this time.

Discrepancies between reports on the presence or absence of specific children are more difficult to resolve because in many instances an element of subjectivity must enter into the decision making. Generally, such discrepancies are adjusted in this birth history analysis only in those instances where the evidence is overwhelmingly definitive regarding which piece of information is correct--such as where an available birth date from either an earlier or later record is entirely consistent with evidence from the respondent's household record. One significant instance of this adjustment is where generally consistent evidence between a later reported birth date and household record information is further corroborated by the report either that a particular child is now deceased or (particularly in the case of mothers' reports) is now living with the other parent. Also, in a few cases, examination of the actual interview schedule at the NORC which include the names of children, clarified whether or not a specific child was being reported on.

Finally, it is emphasized that consistency of reporting is no guarantee of accuracy as a respondent can mis-report in an identical fashion at different points in time. Such misreports may involve multiple inaccurate (but identical) reports of birth dates or of the existence or non-existence of particular births. Also as may be seen in Table 4, there is considerable "netting out" of birth misreporting in the aggregate as infants reported at an earlier date are no longer reported at a later date and vice versa. For example, as may be noted in Table 4, the women in the survey reported 40 births in 1982 which had not appeared in an earlier record (even though the child was presumably alive preceding the 1981 survey) and 19 births at an earlier survey which no longer appear in 1982. Thus, the "net" discrepancy level (40-19=21) is only about one third of the gross level (40+19=59). Similarly, "netting out" can occur on mis-dating, dampening potential effects on period fertility rates. With regard to the "net" mis-reporting of birth events, in a later section we will present comparisons between these data and other comparable data sources, in particular current population survey data.

Internal and external data checks can obviously be more comprehensive with respect to live birth events for young women than for pregnancy events which do not result in a live birth. First, for live births more data are available for comparative purposes. Also, live births must of necessity be at least approximately nine months or more apart, whereas the minimum temporal separation for non-live births is not as well-defined.

The percentage of live births matched identically for the young mothers is significantly higher than for the fathers. This gender difference appears in spite of the fact that the potential for a young mother to recollect a previously unreported birth probably was greater, reflecting the fact that the 1982 retrospective fertility reporting for the women probed for all live births as well as all terminated pregnancies, voluntary or otherwise. Also, everything else being equal, the average mother has a greater likelihood of having an error in her fertility record since she has had on average more births than her comparably aged male counterpart.

The internal record checks for the young women's (and young men's) birth history involved several phases. The first phase of the data check, the most straightforward, involved the reclassification of birth dates from intervals which were clearly impossible into intervals consistent with all other reported evidence. Typically, this involved reclassification of the following type; a birth was originally reported by a mother at, for example, the 1980 interview as having occurred since the preceding interview (e.g., August 1, 1979). At the 1982 interview, the mother reports the same birth as having occurred on June 1, 1980--clearly impossible, as we have incontrovertible evidence of the birth as having already occurred at a preceding interview date. In addition, the earlier birth date is known to be consistent with the age of the infant at all available interview dates. Errors of this type were quite frequent and were completely resolvable because the longitudinal nature of the data set permitted resolution of the temporal discrepancy. Also, a very large proportion of all those births to these younger women have occurred between the first (1979) and 1981 interviews. Whenever the change in report moved across an interview date, resolution frequently became feasible. Resolutions of this type among the young women reduced the number of respondents who had discrepant birth histories from 228 to 191.

In the second phase of the internal record check, information from the household records and birth histories, in conjunction with precise knowledge of interview dates, was utilized to resolve discrepancies not readily resolvable through the Phase I procedure. The most generalizable resolution included the following procedures: The ages of a child on all interview dates was completely consistent with the date of birth reported at either the earlier (1979, or interview following year of birth) or later (1982) interview. It is worth reiterating that the ages as reported in the various household records (covering up to four survey years), the earlier birth date report and the latter birth date report represent independent reports all relating to the same vital event. If all the reports except one are consistent, this represents, in our opinion, overwhelming evidence of the likely accuracy of that particular birth date. This technique, in a limited number of instances, permitted resolution of discrepancies (far beyond "reasonable doubt") in either earlier or later reports on number of children ever born. For example, a young woman reports an earlier birth (let's say, one which occurred in June 1980) only at the 1982 survey but not at an earlier point (in this case it should also have been reported at the 1981 survey). However, in the residence information the mother indicates that the live birth is now deceased. While not common, this occurred several times, undoubtedly reflecting the greater willingness by some women to verbalize an infant's death after some time has passed since the event. This kind of reporting pattern permitted rectifying the earlier (1981) retrospective report.

One other somewhat analogous example is where a mother indicated a birth at the 1979 interview date (let's say the birth date was June 1978), and independently reiterates the presence of that child in the 1979 household record (male - age zero), 1980 household record (male - age one), and 1981 household record (male - age two). However, in the 1982 survey, the own child is mentioned in the household record (male - age three) but for unknown reasons is not mentioned in the birth history (an admittedly rare event), is not mentioned in either record, or more commonly has a birthdate in the 1982 record. Possible reasons for these discrepancies include the death of the child or its absence associated with parental marital transitions. In any event, where the historical evidence is overwhelming that the woman indeed had this birth, or that the earlier date is in all likelihood correct, internal dating consistency is warranted and the 1982 birth record adjusted. Internal checks of all of the above types reduced the internal inconsistency level from

191 to 99. The vast majority of adjustments involved date changes rather than changes in the number of children ever born. Also, in most instances, the changes involved only one dating change although in some cases a respondent reported discrepant dates for a series (two or three) of children. In this type of misreport it was clear that the respondent misdated one child's birth and then sequentially misdated all the others.

It is important to reiterate that no changes were made in any record unless there was substantial, indeed overwhelming, evidence of the likely accuracy of one set of reports in comparison with the other. Changes were only made where complete consistency was evidenced within one pattern of reports (e.g., all household record reports and one reported birth date). In this regard, as will be indicated below, a much higher resolution rate was possible for the mothers' birth records than for the fathers' records, because, as we will see below, a very high proportion of discrepant dating and children ever born reports among fathers were from those who were not living with their children. Thus, the critical element of relevant information from a household record was not available.

The final component of the dating rectification procedure involved reviewing the original interview schedule at the NORC in Chicago. Several kinds of data checks were possible through this procedure. First, a matching of dates of birth or the interview schedule with the date recorded on the computer tape permitted resolution of a few discrepancies due to key punching errors.

Perhaps even more important, in a number of instances dates of birth were spelled out on the interview schedule face sheet or the fertility schedule. Thus, for example, a child reported as under one in the household record might be identified more precisely according to his or her month of age on the schedule face sheet permitting precise matching with the records and thus more definitive identification as to which child in the household he or she should be matched with. Also, in some instances where a discrepancy in month of birth had existed across survey years, the spelling out of a month of birth (e.g., November rather than 11) permitted cross-survey date resolution. In a few instances, the presence of a child's name in conjunction with his or her age and sex permitted precise cross-survey matching which was not previously possible. In this regard, there were a few instances where knowledge of a child's last name helped resolve whether or not a child in all likelihood was the own-born child of a respondent or an adopted or step child. All of the above permitted a further reduction in female birth discrepancies from 99 to the "after" resolution discrepancy count of 54, an overall discrepancy rate of only 3.4 percent, which compares quite favorably with the original discrepancy rate of about 14 percent. An examination of Tables 5 and 6 indicate that it was possible to resolve substantial numbers of birth record discrepancies for virtually all categories of female respondents.

B. Evaluation of Fathers' Birth Records

As may be seen in Tables 4 through 6, the overall reporting discrepancy level and rate prior to adjustment is much larger for young fathers than young mothers. Indeed, almost half of all fathers had at least one discrepancy in their retrospective birth report. One important reason for this high discrepancy rate is the much higher proportion of fathers who were not living with their children, and thus perhaps less likely to be aware of specific birth dates. Also, a substantial number of young men report own children in 1982 but had not reported these same children at earlier survey dates. In most instances, these discrepancies cannot be resolved without additional probes in subsequent interviews. In some instances these "new" children may reflect a knowledge of births which they did not previously have, in some cases a delayed willingness to acknowledge paternity, and probably in some cases they may in fact not be their own children but the children of women whom they have recently married or formed a relationship with. The most common discrepancy is for men who acknowledge for the first time the existence of a child in 1982 even though they are not living with the child at that time. Indeed, one of every four fathers of those children who are not living with them acknowledge their child for the first time in 1982, even though the child had been born before the 1981 survey.

Although a significant portion of the sex differential in reporting discrepancy reflects the lesser likelihood of fathers to be living with their children, this rationale is not a sufficient explanation. As Table 5 demonstrates, men in almost every residence category or marital status are more likely than their female counterparts to have discrepant records. Indeed, it is of some importance to note that fathers living with their children (by far the single largest category) are much more likely to report discrepant birth dates than are mothers in the same category. Thus, aside from demographics, men are simply not as accurate in the reporting of their own birth histories.

In addition to the higher discrepancy rate of fathers, it was also possible to clarify only a smaller percentage of their discrepancies, because of the larger proportion who did not live with their children. For these family units, the household records frequently could not be used for clarifying ambiguities.

Overall, as may be seen in Table 4, 341 of the 728 male respondents who ever reported a live birth originally had at least one discrepant record. Following the same procedures detailed above for the mothers, the number of unresolved discrepancies was reduced to 201. Thus the discrepancy rate was reduced from 47 to 28 percent. Discrepancies were most effectively eliminated for men who were living with their children because then the household record information could be used most effectively.

C. Data Quality and Sample Bias

Table 7 summarizes the effects of the data discrepancy resolution analysis on the overall distribution of the male and female birth records. It may be noted that for both fathers and mothers the utility of the birth records for unbiased cross-tabular analyses is greatly improved by the discrepancy resolutions although significant problems still remain in the father's sample.

For the mothers' sample, almost 94 percent have their children with them in their own household in 1982. Before our internal data evaluation, only about 80 percent of mothers who reported a discrepancy in their birth record had their children living with them. After our data cleanup, 97 percent of the mothers who still had a discrepancy in their birth record were living with their children. From the perspective of household residence, there no longer is any difference between the quality of the birth records for women living or not living with their children.

Following our data cleanup, it may be seen that the mothers who still have inconsistencies in their birth records are more likely to be never married, Hispanic and black. However, the most relevant issue is that there are no significant differences between the household, marital or ethnic distribution of the full sample of mothers and the sample of mothers who have internally consistent birth records--about 97 percent of the full group. Thus, researchers can use the female birth records which are limited to the 97 percent which are internally consistent with full confidence that their

Table 7 Disitribution of Parents with Discrepant and Nondiscrepant Birth Reports Before and After Data Cleanup by Household Status of Children, Marital Status or Race

	Respondent is Father				Respondent is Mother				Total	
	Discrepancy in report		No discrepancy in report		Discrepancy in report		No discrepancy in report		Parent Sample	
	Before	After	Before	After	Before	After	Before	After	Father	Mother
Household status of children	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Child in household	42.4	28.7	64.9	70.3	79.8	70.4	95.1	94.4	60.1	93.6
With other parent only	52.0	61.0	21.7	29.5	3.2	0.0	0.7	1.1	37.2	1.0
Other	5.6	10.4	13.4	0.3	17.0	29.6	4.3	4.5	2.7	5.4
Marital Status in 1982	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Never married	48.5	58.9	13.4	18.6	34.1	42.6	30.6	30.7	29.8	31.1
Married spouse	39.1	28.7	69.6	65.6	48.5	40.7	52.1	52.0	55.4	51.6
Other	12.4	12.4	17.0	15.8	17.5	16.7	17.3	17.3	14.8	17.3
Race/Ethnicity	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Hispanic	13.8	10.8	19.6	19.3	17.0	22.0	15.7	15.7	16.9	15.9
Black	51.8	56.2	19.1	25.9	38.0	40.7	33.9	34.3	34.3	34.5
White	34.4	33.0	61.3	54.9	45.0	37.0	50.4	50.0	48.8	49.6
Sample size	340	203	388	525	229	54	1352	1527	728	1581

NOTE: Distribution by household status excludes cases where there was an interview error or "no children" in household after discrepancy resolution. See Table 4 for a more comprehensive note of definitions of error types.

research will not be subject to sample selection biases due to characteristic differences between mothers who report accurately and mothers who misreport.

As already indicated, it was not possible to resolve inconsistencies in the male birth records to the same degree as for mothers. While the discrepancy rate was reduced substantially from 47 percent to 28 percent, the reduction was not sufficient to make the distribution of fathers non-discrepant birth reports similar to the overall distribution of fathers whether gauged from the perspective of the percentage of children in the household, marital status, or race.

Overall, 60 percent of the fathers in the sample are living with their children. Before our data cleanup, 65 percent of fathers with "clean" birth records lived with their children compared with 42 percent for fathers with discrepancies in their birth records. Because we had greater success resolving discrepancies in the records of fathers who were living with their children, the distribution between discrepant and nondiscrepant reporting fathers according to household structure widened; after the data cleanup, 70 percent of the fathers with "clean" records lived with their children compared with 29 percent for the fathers who still had discrepant birth records. A parallel widening between the characteristics of the discrepant and nondiscrepant reporting father may be noted in the marital status and race/ethnic distributions.

In any event, after resolving all the birth record inconsistencies that could be resolved, we show in Table 7 that the household, marital status, and racial/ethnic distribution of the total sample of fathers remains substantially different from the distribution for the fathers who have "clean" birth records. Thus, researchers using the male data set will need to proceed more cautiously with their research. Unlike those using the female records, such researchers will not be able to limit their analyses to the "nondiscrepant" male sample with confidence that their results--at least their tabular results--are representative of a national sample of young fathers. Tabular analyses requiring national representation should be based on the full male sample, and individual researchers will need to proceed with caution in determining whether or not the specific internal inconsistencies in the fathers' birth records jeopardize the quality of their analyses or the substance of their results.

The data and constructed variables available will permit researchers to follow any of several options. First, the 1982 public use data tape, already available to the public, includes all the fertility-related variables for the men and women as they were received from the NORC. Thus, researchers who wish to work with the original data may do so.

The extract tape prepared at the Center for Human Resource Research includes revised versions of all fertility variables for which changes were made, based on the discrepancy analyses detailed above. Thus, the extract tape does not include all of the original fertility variables but only those variables where a change from the original record was indicated.

In addition, the extract tape includes a large number of created basic fertility variables which are commonly used in fertility research. These include but are not limited to a variable on number of children ever born as of 1982, spacing (between marriage and first birth, first and second birth), mother's or father's age at marriage, at first and second birth, and so on. We also created a few variables relating to marital status (month and year of first marriage, divorce, second marriage, age at the first marriage) to negate the need for researchers to scan across all survey years in order to repeatedly create these commonly-used variables.

The revised birth data were used in creating all these fertility variables. However, these variables are not limited to nondiscrepant birth records. They include information for all the parents in the survey and are based on the retrospective reports from the 1982 interview schedule as revised.

Finally, the extract tape also includes a variable which will permit researchers to include or exclude discrepant birth records and will identify the nature of the data problem for records with unresolved discrepancies. There are three codes on this variable permitting identification of (1) records which have no internal discrepancy (2) records with a unresolved dating discrepancy and (3) records with a unresolved discrepancy in the number of children ever born. This variable will permit researchers to limit their analyses to birth records which are internally consistent, if they choose to do so. It will enable them to perhaps exclude the more serious cases with unresolved parity. In any event, it will allow researchers to proceed with any methodological analyses of their own liking aimed at clarifying the magnitude and substance of these discrepancies.

D. External Data Quality Checks

In this section, the levels and patterning of live births, pregnancies not resulting in a live birth, and related fertility information for the female respondents is compared with other available data. To the maximum extent feasible, we have attempted to match our sample as closely as possible to the data sets we are comparing our data with--in terms of geographic comparability, racial definitions, age and seasonality. All of the birth comparisons use NLS rates and measures derived from the post-discrepancy analysis birth data. Pre-discrepancy resolution estimates are generally not included for comparative purposes because without exception, the female data cleanup did not affect any of the birth tabulations in a significant way. Given the relatively low error rate and the apparent tendency of discrepant reports to "net out," it can be unequivocally stated that none of the female period or cohort fertility measures examined changed more than trivially when we revised the data. This finding is of some importance in its own light.

(1) Comparison with CPS birth estimates.

Table 8 includes a precisely matched comparison of childlessness and period birth rates between unpublished data from the June 1981 Current Population Survey and the 1982 NLS. In order to maximize comparability, the NLS statistics, which are from the retrospective birth reports in the 1982 interview schedule, were temporally matched with the retrospective reports in the June 1981 CPS. That is, the NLS statistics in this table are for the 49-week period preceding the June 1981 CPS survey week which provides a reference period identical to that used in the CPS (which measures fertility between July 1, 1980 and the 1981 survey week). Also, identical racial definitions were used. Finally, statistics in this table are for number of women who had a birth during the period, not the total number of births in the period.

After making these comparability adjustments, we show in Table 8 that the overall fertility statistics for the two data sets are virtually identical. Within marital statuses, the percent childless for the two data sets are not significantly different from each other. The statistics on the percentage of women who have had a child in the past year virtually coincide with each other (although the never-married NLS women do have a slightly higher birth rate), and even the annual birth rates within the parity-specific categories are very close to each other.

An examination of the separate racial statistics suggests some differences which are usually modest but probably not random as there appear

Table 8 18-24 Year Olds Who have had a Child in the Past Year by Race and Marital Status: Comparison of June 1981 CPS with 1982 NLS: Young Women
(numbers in thousands)

	No. of women	Childless women		Women who have had a child in past year					
				All women		Women with 1 CEB		Women with 2+ CEB	
	Number	Number	Percent	Number	Per 1,000	Number	Per 1,000	Number	Per 1,000
Total race									
Total marital status									
CPS	14849	10350	69.7	1367	92.1	736	49.5	631	42.5
NLS	14453	10267	71.0	1315	91.0	742	51.3	574	39.7
Ever married									
CPS	5839	2437	41.7	1101	188.6	571	97.8	530	90.7
NLS	5381	2218	41.2	1002	186.2	538	100.0	464	86.2
Never married									
CPS	9010	7913	87.8	266	29.5	164	18.2	102	11.3
NLS	9074	8050	88.7	314	34.6	204	22.5	109	12.0
White									
Total marital status									
CPS	12400	9070	73.1	1082	87.2	608	49.1	473	38.2
NLS	11539	8674	75.2	919	79.6	564	48.9	355	30.7
Ever married									
CPS	5184	2282	44.0	953	183.9	514	99.1	439	84.7
NLS	4547	2009	44.2	793	174.4	463	101.8	330	72.5
Never married									
CPS	7216	6788	94.1	129	17.8	94	13.1	34	4.7
NLS	6994	6667	95.3	125	17.9	101	14.4	25	3.6
Black									
Total marital status									
CPS	2047	978	47.8	252	123.0	107	52.3	145	70.7
NLS	2054	1092	53.2	256	124.5	112	54.5	143	69.6
Ever married									
CPS	502	90	18.0	117	232.1	39	78.4	77	153.7
NLS	437	98	22.4	96	219.7	26	59.5	70	160.2
Never married									
CPS	1545	888	57.5	135	87.5	68	43.8	68	43.8
NLS	1616	994	61.5	160	100.9	87	53.8	73	45.2
Hispanic									
Total marital status									
CPS	1058	626	59.2	129	122.1	71	66.7	59	55.4
NLS	887	519	58.5	143	161.2	66	74.4	77	86.5
Ever married									
CPS	482	149	30.9	106	219.7	58	120.4	48	99.3
NLS	402	113	28.0	115	286.1	49	121.9	66	164.2
Never married									
CPS	576	478	83.0	23	40.4	13	21.8	11	18.6
NLS	485	406	83.8	28	57.7	17	35.1	11	22.5

NOTE: The NLS data are for a 49 week period preceding the survey week, comparable with the June 1981 CPS data which are for the period between the June 1981 CPS week and the preceding July 1. Statistics are for the number of women who had a birth during the period, not the total number of births in the period. The source for the CPS data are unpublished tabulations based on the 1981 CPS prepared by the U.S. Bureau of the Census.

to be systematic patterns of differences. For the white respondents, the NLS and CPS childlessness statistics are identical but the NLS married women have a slightly lower period birth rate. Black NLS respondents appear to be slightly more likely to be childless than their CPS counterparts. While the overall birth rate for black NLS and CPS respondents are virtually identical, this similarity masks a variation by marital status; NLS black married women had slightly lower birth rates than their CPS counterparts but the reverse was true for those who were never married. Given the identical NLS and CPS overall birth rates for the black women, this difference may well represent differences between NLS and CPS respondents in marital status reporting rather than fertility reporting. Indeed, the NLS respondents are somewhat more likely to report themselves as never married than the CPS respondents, which probably accounts for at least part of the discrepancy in birth reporting by marital status between the two data sets.

Whereas no significant differences appear in childlessness reporting between CPS and NLS Hispanic women, large differences appear in birth reporting. Overall, and within the marital status categories, NLS Hispanic women are much more likely to report a birth within the past year; whether this reflects more complete birth reporting in the NLS survey or differences in the nature of the CPS and NLS Hispanic samples warrants further investigation. It may be noted that the NLS Hispanic sample, when weighted up to population totals, still falls substantially short of the CPS Hispanic population of the same age for the same point in time.

Table 9 shifts from a period to a cohort perspective and compares relatively comparable groups of NLS and CPS mothers in terms of their lifetime fertility by the age at which they began childbearing. It may be seen that in almost all instances the lifetime fertility reported for the NLS and CPS

Table 9 Children Ever Born Per Mother by Age of Mother and age at First Birth

	Age of mother = 18-19		Age of mother = 20-24	
	1982 NLS	1980 CPS	1982 NLS	1980 CPS
Children ever born per mother by age at first birth				
14-17	1.34 (184)	1.35	1.95 (473)	1.97
18-19	1.01 (85)	1.01	1.54 (532)	1.55
20-21	- -		1.25 (445)	1.28
22-24	- -		1.05 (202)	1.12

NOTE: CPS statistics are from Table 18 of U.S. Bureau of the Census, Fertility of American Women: June 1980, Current Population Reports Series p-20 No. 375.

mothers is identical. Regardless of which age cohort one examines, after controlling for age at first birth, the NLS and CPS mothers have followed identical childbearing patterns so far. Thus, it is fair to conclude that the quality of the NLS birth information is essentially equivalent to that reported in the CPS (and vice versa).

As one final comparison with CPS, Table 10 contrasts cumulative first births per 1000 women between the NLS and 1980 Current Population Survey Statistics. These two sets of data do not represent identical cohorts or methodologies, so there is no reason to expect the reported birth levels to be identical. The NLS women are an appreciably younger group than the 1950-1954 CPS birth cohort and the methodology utilized in deriving the NLS single-year-of-age statistics used a quasi-cohort approach different from the CPS procedures. These differences in cohort and methodology could account for the generally lower NLS fertility estimates. The principal utility of the comparison made in this table is to note the essentially similar pattern of increase in cumulative fertility between the two data sets. Specifically, the ratio of NLS to CPS cumulative fertility is about the same at all ages excepc age 18, ranging between .90 and .93. Thus, the temporal patterning of cumulative fertility appears similar between the two data sets.

Finally, Tables 11 and 11A contrast the cumulative first birth fertility patterns for men before and after the birth record discrepancy exercise. Comparisons with other data sets are not possible because to our knowledge there are no analogous male statistics. It may be noted that the fertility history cleanup in some instances has substantially altered the fertility levels for these young men although generally there has been no major effect on the temporal patterning of the histories. This latter fact reflects the generally known phenomenon that cumulative patterns are less sensitive to

Table 10 First Births Per 1000 Women Cumulated to Successive Ages by Race: Comparison of 1980 CPS and 1982 NLS

	Total		White		Black		Hispanic
	NLS	CPS 1980	NLS	CPS 1980	NLS	CPS 1980	NLS
Percent with first birth by age							
18	95 (5578)	89	68 (3307)	68	221 (1416)	239	147 (870)
19	145 (4838)	153	108 (2902)	125	314 (1220)	354	231 (729)
20	211 (4090)	230	168 (2496)	199	401 (1021)	456	320 (584)
21	270 (3348)	300	219 (2074)	268	498 (813)	526	409 (470)
22	336 (2567)	364	290 (1626)	331	559 (595)	598	432 (354)
23	384 (1744)	421	335 (1111)	390	616 (393)	649	466 (243)
24	437 (954)	472	386 (611)	443	684 (206)	682	519 (139)

NOTE: NLS group is essentially a 1958-1964 birth cohort. The CPS comparison is for the 1950-1954 birth cohort as of 1980. The NLS statistics in this table essentially represent a modified cohort approach, that is, the percent with a first birth by age 18 and over. The percent with a first birth by age 19 is for the population 19 and over and so on. Given the constraints of the data sets, it was not possible to devise a theoretically more appropriate retrospective match. At least part of the discrepancy between the two sets of fertility statistics may reflect the different methodological approaches and the fact that the data are for somewhat different birth cohorts. All tables which include CPS comparisons use CPS race definitions. CPS estimates are from Table 20 of U.S. Bureau of the Census Fertility of American Women: June 1980, Current Population Reports Series P-20 No 375.

Table 11 First Births Per 1000 Men Cumulated to Successive Ages by Race: Post Discrepancy Results

	Total		White		Black		Hispanic	
Percent with first birth by age								
18	18	(5571)	9	(3314)	63	(1421)	35	(852)
19	40	(4809)	25	(2898)	118	(1218)	63	(705)
20	71	(4039)	53	(2449)	166	(1001)	101	(601)
21	111	(3298)	86	(2055)	241	(792)	158	(460)
22	158	(2515)	129	(1626)	313	(570)	229	(325)
23	207	(1727)	174	(1116)	382	(397)	275	(218)
24	262	(935)	225	(614)	442	(208)	386	(115)

See Note to Table 10.

Table 11A First Births Per 1000 Men Cumulated to Successive Ages: Pre-Discrepancy Results

	Total		White		Black		Hispanic	
Percent with first child by age								
18	17	(5572)	9	(3315)	58	(1421)	32	(852)
19	37	(4810)	24	(2899)	108	(1218)	62	(705)
20	68	(4040)	51	(2450)	156	(1001)	100	(600)
21	108	(3299)	85	(2056)	224	(792)	152	(460)
22	150	(2515)	123	(1626)	294	(570)	224	(325)
23	205	(1727)	172	(1116)	381	(397)	275	(218)
24	254	(935)	218	(614)	442	(208)	359	(115)

See Note to Table 10

dating errors as the impact of systematic changes in the age-specific rates tends to be diffuse and usually shows up as altering the level rather than shape of the fertility curve.

The adjustments made in the male birth records in this instance have resulted in generally higher cumulative first birth rates at the ages between 19 and 22. The changes in the white rates are modest, and the changes in the black rates are much more significant. This latter fact is not surprising--it reflects the fact that in an absolute sense, the changes made in the black male birth histories were the largest (reducing the discrepancy rate from 70 to 45 percent, as may be noted in Table 5). Given the substantial increase in the cumulative black male first birth rates for all ages below 23, it appears that the changes made in the black birth histories were not random in the sense that they tended to "net out" in their effects on fertility rates. It is not clear what the impact of further reducing the black discrepancy rate would be. However, these results suggest an important caveat for users of these male fertility records.

(2) External data checks on the quality of abortion and other fertility-related data reporting.

Because retrospective reports on pregnancies not terminating in a live birth were available for only one point in time it was not possible to carry out any internal checks on the quality of the abortion and miscarriage reporting. Thus, for the most part, our examination of the quality of events other than live birth is limited to comparisons with other data sets.

Table 12 compares the percentage of premaritally pregnant women age 15 to 19 whose first pregnancy ended in a live birth using comparable groups of women from the NLS in 1979 and the 1976 data reported by Zelnik, Kantner and Ford. In both cases, the data are limited to samples of metropolitan women in

Table 12 Percentage of Premaritally Pregnant Women 15-19 years of Age Whose First Pregnancy Ended in a Live Birth: Comparison of 1979 NLS with 1976 Zelnik-Kantner Data
(sample sizes in parentheses)

		NLS		Zelnik Kantner
Current age				
	15-16	76.8	(59)	54.0
	17	59.7	(77)	57.6
	18	85.3	(97)	68.8
	19	82.2	(123)	68.1
	15-19	77.4	(356)	64.8
Parent's education				
	Less than 9	85.7	(85)	81.3
	9-11	84.5	(100)	70.7
	12	75.8	(113)	55.7
	13 or more	48.3	(39)	32.4
Age at first conception				
	14 and under	68.3		80.5
	15	67.4		74.8
	16	85.1		67.9
	17 and over	88.7		51.8
Pregnancy intention				
	wanted	84.6	(101)	92.5
	not wanted	75.4	(247)	51.2
White		70.3	(141)	54.8

NOTE: NLS sample was matched as closely as possible to Zelnik/Kantner data for metropolitan teenagers as reported in Table 5.5 of Sex and Pregnancy in Adolescence by Melvin Zelnik, John F. Kantner and Kathleen Ford. Sage Publications, Beverly Hills, 1981.

order to maximize comparability.[1] Overall, about 65 percent of the Zelnik/Kantner premaritally-pregnant women had their pregnancy result in a live birth compared with about 77 percent for the NLS sample. Assuming comparable levels of reporting for live births, this difference implies a nonlive termination rate substantially more than 50 percent higher in the Zelnik than in the NLS data. It may be noted in Table 12 that the discrepancy between the two data sets is greater for white young women, for women whose parents have more education, who retrospectively reported that they did not want the pregnancy and who conceived at an older age. Indeed, the data in Table 12 indicate that for women conceiving at a young age--below 16--the NLS sample reports a higher level of pregnancies not ending in a live birth. Thus, the data are strongly consistent with the notion that the abortion non-reporting bias in the NLS is apparently most serious among young women from higher status backgrounds who are conceiving at older ages. Also, to the extent that the proportion of teenage pregnancies ending in an abortion may be increasing, (as suggested by Pratt and Bachrach in their summary paper on the 1982 National Survey of Family Growth[2]) the comparison of the 1976 Zelnik/Kantner and 1979 NLS statistics may understate actual differences in levels of abortions.

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[1] The comparison data are from Tables 5.5 of Sex and Pregnancy in Adolescence by Melvin Zelnik, John F. Kantner and Kathleen Ford, Sage Publications, Beverly Hills, 1981. Even after limiting the NLS sample to metropolitan women other differences keep the sample from being exactly comparable. For example, the Zelnik/Kantner sample excludes women living in dormitories.

[2] William F. Pratt and Christine A Bachrach, "Preliminary Estimates of the Population 'at Risk' of Pregnancy and of those using Contraception--Findings from Cycle III of the National Survey of Family Growth," presented at the 1983 Meetings of the American Public Health Association, Dallas, Texas, November, 1983.

Table 13 compares a variety of teenage pregnancy statistics from the NLS with, in this case, temporally comparable statistics from the 1979 Zelnik/Kantner study.[3] The NLS teenagers are much less likely to have reported a premarital pregnancy, which is consistent with the knowledge that they are significantly less likely to report an abortion. For those premaritally pregnant young women still unmarried at the time of the pregnancy resolution, 16 percent of the NLS sample reported that they had an induced abortion compared with about 37 percent for the Zelnik/Kantner sample. Significant differences in these statistics were reported for both black and white respondents.

Regarding marital resolution of the premarital pregnancy, prior "wantedness" of the pregnancy and prior contraceptive use among those not wanting the pregnancy, the differences between the studies are less pronounced. Indeed, the somewhat greater wantedness of a pregnancy reported by the NLS women and their lesser use of contraception are certainly consistent with the knowledge that the NLS women were under-reporting abortions--which were somewhat less wanted pregnancies but probably associated with slightly greater attempts at contraception. In general, it may be concluded on the basis of the above (and other data not presented here) that the NLS retrospective fertility reports greatly understate abortion reports but that other information on marriage resolution, prior contraceptive usage and prior pregnancy wantedness are probably of a quality equivalent to the information gathered in the Zelnik/Kantner studies.

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[3] All the 1979 Zelnik/Kantner statistics cited are from "Sexual Activity, Contraceptive Use and Pregnancy Among Metropolitan Area Teenagers: 1971-1979" in Family Planning Perspectives Vol. 12 Number 5, September/October 1980.

Table 13 A Comparison of Selected NLS and Zelnik-Kantner 1979 Teenage Pregnancy Statistics

		Total	White	Black	Hispanic
Percent ever pregnant before marriage (all 15-19 year-old women)	NLS	10.9	8.1	22.9	15.4
		(2509)	(1320)	(704)	(485)
	Z-K	16.2	13.5	30.0	
Marriage resolution status for all 15-19 year-old premaritally pregnant women					
Married before resolution					
	NLS	19.8	28.4	3.5	
	Z-K	15.5	20.3	4.3	
No Marriage before resolution					
	NLS	80.2	71.6	96.5	
	Z-K	84.5	79.7	95.7	
Married after resolution					
	NLS	7.9	9.5	3.5	
	Z-K	14.3	17.0	8.0	
Never married by 1979					
	NLS	72.4	62.2	93.0	
		Z-K	70.2	62.7	87.7
Pregnancy resolution status for premaritally pregnant unmarried at time of pregnancy resolution					
% with live birth					
	NLS	76.1	65.0	87.3	85.2
	Z-K	49.4	38.6	71.4	
% with miscarriage/still birth					
	NLS	7.5	8.5	5.8	9.4
	Z-K	14.0	16.4	9.0	
% with induced abortion					
	NLS	16.5	26.5	7.0	5.4
	Z-K	36.6	45.0	19.6	
Pregnancy intention for premaritally pregnant unmarried at time of resolution					
% wanted pregnancy					
	NLS	24.2	20.9	25.5	32.2
		(284)	(96)	(144)	(44)
	Z-K	18.0	16.4	20.9	

Table 13 Continued

		Total	White	Black	Hispanic
Contraceptive use among subset who did not want pregnancy					
% using contraception	NLS	26.3	19.9	34.4	11.4
		(212)	(71)	(113)	(28)
	Z-K	31.5	22.0	36.1	

NOTE: All comparison statistics are from "Sexual Activity, Contraceptive Use and Pregnancy Among Metropolitan-Area Teenagers: 1971-1972," in Family Planning Perspectives Vol. 12, No. 5, September/October 1980.

A more precise fix on the magnitude of the abortion under-reporting can be obtained by comparing abortion to live birth ratios for 15 to 19 year olds in the NLS sample with comparable estimates for the National Center for Health Statistics thirteen-state reporting area.[4] The NCHS data are probably the highest quality available abortion reports. As may be seen in Table 14, the overall number of abortions per 1000 live births is substantially higher in the NCHS report than for the NLS. Limiting the NLS reports to young women living in the thirteen reporting states reduces the differences somewhat, but nonetheless they remain substantial. Overall, the data suggest that the NLS respondents are reporting about 40 percent of their abortions, about 50 percent for white and 33 percent for black young women.[5]

Table 15 provides additional detail on the patterning of pregnancy resolution by parity race and age at first conception for the full sample of young women. It may be seen (in Table 15) that the level of abortion reporting is lower for black than for white respondents, consistent with other available evidence. Hispanic abortion reporting is approximately at the same level as that for blacks. For all three racial groups, miscarriage reports substantially exceed abortion reports. Other evidence not presented here (but briefly discussed in a later section) suggest that there is no significant evidence of respondents reporting abortions as miscarriages. The characteristics of young women reporting miscarriages are very similar to those of women reporting live births; both differ from the characteristics of women reporting abortions.

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[4] The NCHS data are from Table A in NCHS Report Vol. 31 No. 5 Supplement, October 25, 1982 entitled Induced Termination of Pregnancy: Reporting States, 1979 by Drucilla Burnham.

[5] This estimate assumes that the NCHS reporting is complete, an assumption probably not warranted.

Table 14 Comparison of Abortion to Live Birth Ratios Between NLS 15-19 Year-Olds During 1979 with 15-19 Year-Olds as Reported by the National Center for Health Statistics in 1979

	Ratio of Abortions to Live Births Per 1000 Events								
	Total			White					
	NCHS	Total NLS	13 State NLS	NCHS	Total NLS	13 State NLS	NCHS	Total NLS	13 State NLS
15-19	726.1	168.1	319.1	809.3	220.1	410.7	559.7	69.2	189.2
15	963.4	111.1	a	1225.4	a	a	707.0	a	a
16	838.4	163.3	a	1028.1	a	a	575.8	a	a
17	732.5	197.5	a	851.1	a	a	514.5	a	a
18	792.5	80.0	a	898.2	a	a	564.8	a	a
19	599.2	251.7	a	623.6	a	a	538.2	a	a

[a] Insufficient sample sizes for data presentation. 13 state NLS statistics limited to the 13 reporting states in the NCHS sample. The NCHS statistics are from Table A in NCHS Report Vol 31 No. 7 Supplement, October 25, 1982 entitled Induced Termination of Pregnancy: Reporting States, 1979 by Drusilla Burnham.

Table 15 Distribution of Number of Pregnancies by Pregnancy Outcome: Young Women

(Numbers in thousands and sample sizes in parentheses)

	Number of women in category	Number of preg-nancies	Number of abortions	Number of still-births	Number of mis-carriages	Number currently pregnant	Number of live births	Potential live births[1]	Percent live births	Percent abor-tions	Percent miscarriages[2]
Number of pregnancies											
1	3159 (1350)	3159	410	10	177	447	2115	2712	78.0	15.1	6.9
2	1725 (747)	3447	253	9	419	322	2444	3125	78.2	8.1	13.7
3	666 (294)	2002	164	25	345	115	1353	1887	71.7	8.7	19.6
4	163 (87)	651	68	0	98	39	446	612	72.9	11.1	16.0
5	74 (38)	363	14	1	98	19	231	344	67.2	4.1	28.7
6	14 (8)	82	2	7	26	2	45	80			
7	3 (2)	21	2	0	4	0	15	21			
8	1 (1)	8	0	0	3	0	5	8			
Total events	5799 (2527)	9733	913	52	1171	944	6654	8789	75.7	10.4	13.9
All pregnancies											
White	4146 (1345)	6798	714	31	937	703	4413	6095	72.4	11.7	15.9
Black	1180 (769)	2079	136	15	160	163	1605	1916	83.8	7.1	9.1
Hispanic	474 (413)	867	57	5	83	83	639	784	81.3	7.3	11.4

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[1] Excludes current pregnancies. [2] Includes stillbirths.

NOTE: No respondent has more than 8 pregnancies.

As may also be seen in Table 15, as the number of pregnancies which these young women have had increases, the probability that the pregnancy will result in a live birth decreases. This is not because of any change in abortion rates but rather a greater likelihood that the higher parity women will have had a miscarriage. The causality between such events is of course multidirectional; young women more prone to miscarriages may conceive more frequently partly because of a desire to have children and partly because they are fertile (not pregnant) for a larger proportion of the time. Also, a larger number of pregnancies at an early age implies narrower spacing with the mother possibly being less likely to have regained her strength before the next pregnancy. This may be associated with above average miscarriage probabilities.

The forthcoming 1984 NLS survey will include a special confidential self report section to be filled out by all respondents which will elicit information about any prior abortions. It is hoped that this confidential report will improve the data quality for this reporting event and also provide insight into related characteristics of respondents who did not report in 1982 on abortions which had actually taken place by then.

IV. SUMMARY OF FERTILITY-RELATED STATISTICS FROM THE 1982 NLS

This section presents a variety of data on live births and pregnancies, fertility expectations, sexual activity and contraception and retrospective reports on the "wantedness" of earlier pregnancies. These data will provide an overview of various dimensions of contemporary teenage and young adult sexual and fertility behavior. They will also clarify somewhat further the extent to which these NLS data may be comparable with other data sets. The textual comments are not meant to be comprehensive but rather to suggest in an abbreviated manner some analytically useful highlights or ways in which the NLS data are similar to or different from other fertility data sets.

A. Fertility Expectations

Tables 16 and 17 summarize birth expectations for the young men and women by age, marital status, race and, for the 22 to 24 year-olds in the sample, by educational attainment. In general, the female respondents in the NLS are less likely to report that they expect no children or one child and more likely to report that they expect four or more children than their CPS counterparts: this systematic pattern appears at all ages, marital statuses and races. Overall, 6.4 percent of the NLS 18 to 24 year-old women expect no children compared with about 11 percent for 18 to 24 year-olds as reported in the June 1981 Current Population Survey.[6] Seven percent of the CPS respondents had an incomplete response or no response on fertility expectations and an additional seven percent were "uncertain," whereas the NLS respondents in almost all instances (over 99 percent gave a numerical response) provided an answer to this question so it may be that at least part of the difference in expectation levels between the data sets may reflect these differences in reporting completeness in the expectation items.[7] It is of some importance to note that the discrepancy between the NLS and CPS statistics was greatest for the never married, a majority of the sample. This category had by far the greatest under-reporting in the CPS. Fully 16.5 percent of the 18-24 never-married CPS respondents were "uncertain" about their expectations and 18.4 percent had an incomplete or no response. Thus,

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[6] Tables 9 and 10 in U.S. Bureau of the Census, Fertility of American Women: June 1981 Current Population Reports Series P-20 No. 378 April 1983.

[7] Table A-1, op. cit.

Table 16 Percentage Distribution of Total Births Expected by Selected Characteristics: Young Women

(Weighted percentages)

	Total	0	1	2	3	4	5 or 6	7	sample size
Total sample	100.0	6.5	9.3	51.1	20.4	9.4	2.9	0.4	5931
17	100.0	7.4	8.9	48.7	18.4	11.0	5.5	0.1	451
18-24	100.0	6.4	9.3	51.5	20.5	9.3	2.6	0.5	5350
18-19	100.0	6.2	8.3	53.8	18.8	9.9	2.6	0.3	1455
20-21	100.0	7.7	8.8	50.7	20.5	8.7	2.9	0.6	1493
22-24	100.0	5.6	10.2	50.6	21.6	9.3	2.3	0.5	2402
25	100.7	7.5	11.7	42.3	26.6	7.2	4.8	0.0	130
Total sample									
Never married	100.0	8.6	8.5	49.7	19.9	10.0	3.0	0.4	3717
Married-spouse present	100.0	1.7	9.8	55.4	21.2	8.9	2.5	0.4	1784
Widow/div./sep.	100.0	6.7	15.5	44.4	22.4	6.0	4.3	0.7	430
Total sample									
Hispanic	100.0	5.3	8.2	46.6	21.7	12.6	4.8	0.8	937
White	100.0	6.7	8.3	52.4	20.8	8.9	2.6	0.4	3510
Black	100.0	5.6	15.5	45.4	17.9	10.7	4.0	0.9	1501
22-24 year olds									
0-11 years school	100.0	2.5	11.8	42.8	20.3	15.5	6.4	0.7	345
12 years	100.0	4.5	10.6	53.5	22.0	7.7	1.7	0.1	1138
13-15 years	100.0	6.3	8.8	50.6	21.4	9.1	2.6	1.1	614
16 years	100.0	9.4	10.4	46.0	23.4	10.0	0.2	0.7	258
17 or more yrs.	100.0	17.4	6.4	57.9	8.2	10.2	0.0	0.0	34

NOTE: CPS racial definitions used.

Table 17 Percentage Distribution of Total Births Expected by Selected Characteristics: Young Men
(Weighted percentages)

	Total	0	1	2	3	4	5 or 6	7 or more	Unweighted sample sizes
Total sample	100.0	7.5	6.4	52.7	20.8	9.2	2.7	0.7	6009
17	100.0	9.7	4.0	49.9	21.6	12.8	1.8	0.2	507
18-24	100.0	7.2	6.5	52.9	20.9	8.9	2.9	0.7	5348
18-19	100.0	7.5	5.7	50.5	21.5	10.6	3.3	0.8	1510
20-21	100.0	7.1	6.2	53.6	20.9	8.7	2.6	0.9	1512
22-24	100.0	7.1	7.3	54.0	20.5	7.9	2.7	0.5	2326
25	100.0	7.4	9.6	57.7	16.3	5.7	2.6	0.7	154
Total sample									
Never married	100.0	8.6	5.6	52.0	20.8	9.5	2.9	0.7	4688
Married, spouse present	100.0	2.7	8.8	57.9	20.5	7.5	1.9	0.6	1136
Widowed/separated/divorced	100.0	5.2	15.1	41.5	23.7	9.5	4.2	0.7	185
Total sample									
Hispanic	100.0	4.8	5.2	43.7	26.9	13.9	4.4	1.2	922
White	100.0	7.8	6.2	55.2	20.0	8.1	2.3	0.3	3576
Black	100.0	6.7	7.8	42.2	22.7	13.7	4.6	2.2	1528
22-24 year olds									
0-11 years school	100.0	6.0	11.4	52.2	17.8	9.7	2.1	0.7	390
12 years	100.0	7.1	9.3	52.2	20.2	7.9	3.0	0.3	1179
13-15 years	100.0	8.0	3.3	57.7	21.3	5.9	3.1	0.7	487
16 years	100.0	6.7	4.0	57.7	20.4	8.1	2.6	0.5	214
17 years or more	100.0	8.6	3.1	45.4	28.4	14.0	0.5	0.0	46

NOTE: CPS racial definitions used.

about one third of the CPS never-married sample age 18-24 did not respond completely to the expectation item.

Table 17 presents the same fertility expectations data for the young men. It may be seen that they have expectations essentially similar to the young women. The only difference of note is that better educated 22 to 24 year-old women are more likely to expect to be childless than their male counterparts, whereas less educated women expect larger families than less educated young men.

Tables 18 and 19 present comparable data on additional children expected, taking into account children ever born. The interested reader may compare the female expectations data in Table 18 with comparable statistics from the CPS. These may be found in Table 7 of the 1981 CPS fertility report cited above.

B. Period and Cohort Fertility

Tables 20 and 21 present current (period) fertility measures for the young women and men. These data are for a 52-week period (compared with the 49-week estimates presented in Table 8 for comparing NLS and CPS period estimates). Significant differences in childlessness and period fertility between men and women and between the races may be noted. The reported racial differences are much larger among the women than the men perhaps reflecting a greater likelihood of under-reporting for minority men compared with minority women.

It is also useful to note that even though no major differences in fertility expectations were reported between black and white respondents, the pace of current childbearing is obviously much more rapid for the black respondents. They are less likely to be childless and more likely than their white counterparts to have had a child during the past year. Either they are

Table 18 Number of Children Ever Born by Number of Additional Births Expected by Marital Status: Young Women

Number ever born	Total		Number of additional births expected 0	1	2	3	4 or more
			Total sample				
Percent distribution	100.0	(5932)	16.1	16.8	42.8	15.1	9.2
0	100.0	(3911)	9.0	8.2	52.6	18.4	11.9
1	100.0	(1266)	19.1	48.9	22.0	7.8	2.1
2	100.0	(558)	57.4	23.9	11.1	4.9	2.8
3	100.0	(149)	76.0	19.2	-	-	-
4 or more	100.0	(48)	82.8	11.3	-	-	-
			Ever married				
Percent distribution	100.0		24.0	27.3	35.1	9.2	4.4
0	100.0		6.3	10.4	61.5	14.0	7.7
1	100.0		18.3	50.0	22.7	7.0	1.9
2	100.0		58.3	23.7	10.3	4.8	2.8
3	100.0		77.8	17.1	-	-	-
4 or more	100.0		82.5	10.0	-	-	-
			Never married				
Percent distribution	100.0		11.8	11.1	47.0	18.3	11.8
0	100.0		9.6	7.7	50.4	19.4	12.9
1	100.0		21.2	46.0	20.3	10.1	2.4
2	100.0		52.6	24.6	14.9	5.4	2.4
3	100.0		69.0	27.4	-	-	-
4 or more	100.0		84.0	16.0	-	-	-

NOTE: Sample sizes in parentheses.

Table 19 Number of Children Ever Born by Number of Additional Births Expected by Marital Status: Young Men

Number ever born	Total		Number of additional births expected				
			0	1	2	3	4 or more
			Total sample				
Percent distribution	100.0	(6012)	11.5	10.0	49.3	18.2	11.1
0	100.0	(4944)	8.7	5.6	53.8	19.9	12.0
1	100.0	(741)	15.9	44.5	25.3	8.7	5.6
2	100.0	(257)	62.1	21.2	9.8	3.1	3.8
3	100.0	(54)	76.7	18.0	1.5	1.9	1.9
4 or more	100.0	(16)	68.5	-	-	-	-
			Ever married				
Percent distribution	100.0		19.6	24.6	39.2	11.1	5.6
0	100.0		6.3	7.7	61.4	16.5	8.2
1	100.0		16.2	49.8	23.3	7.7	3.0
2	100.0		65.3	20.6	8.5	2.4	3.1
3	100.0		79.0	14.6	-	-	-
4 or more	100.0		80.0	-	-	-	-
			Never married				
Percent distribution	100.0		9.5	6.4	51.8	19.9	12.5
0	100.0		9.0	5.3	52.9	20.4	12.5
1	100.0		15.1	31.4	30.4	11.1	12.0
2	100.0		44.6	24.5	16.7	6.9	7.2
3	100.0		65.6	34.4	-	-	-
4 or more	100.0		50.0	-	-	-	-

NOTE: Sample sizes in parentheses.

Table 20 18-24 Year Olds Who Have Had a Child in the Past Year (52 week period) by Race and Marital Status: 1982 NLS: Young Women
(Thousands)

	No.of women	Childless women		Women who have had a child in past year					
				All women		Women with 1 CEB		Women with 2+ CEB	
	Number	Number	Percent	Number	Per 1,000	Number	Per 1,000	Number	Per 1,000
Total race									
Total marital status	14453	10267	71.0	1391	96.2	786	54.4	604	41.8
Ever married	5381	2218	41.2	1062	197.4	575	106.9	487	90.5
Never married	9074	8050	88.7	329	36.3	211	23.2	117	12.9
White									
Total marital status	11539	8674	75.2	977	84.7	602	52.2	375	32.5
Ever married	4547	2009	44.2	847	186.3	497	109.3	350	77.0
Never married	6994	6667	95.3	130	18.6	106	15.2	25	3.6
Black									
Total marital status	2054	1092	53.2	267	130.0	116	56.5	151	73.5
Ever married	437	98	22.4	97	222.0	27	61.8	70	160.2
Never married	1616	994	61.5	170	105.2	89	55.1	81	50.1
Hispanic									
Total marital status	887	519	58.5	147	165.7	68	76.7	80	90.2
Ever married	402	113	28.0	120	298.5	51	126.9	68	169.2
Never married	485	406	83.8	28	57.7	17	35.1	11	22.7

NOTE: The NLS data are for a 52 week period preceding the survey week. Statistics are for the number of women who had a birth during the period, not the total number of births in the period.

Table 21 18-24 Year Olds Who Have Had a Child in the Past Year (52 week period) by Race and Marital Status: 1982 NLS: Young Men
(Thousands)

	No.of men	Childless men		Men who have had a child in past year					
				All men		Men with 1 CEB		Men with 2+ CEB	
	Number	Number	Percent	Number	Per 1,000	Number	Per 1,000	Number	Per 1,000
Total race									
Total marital status	13906	11915	85.7	785	56.4	548	37.4	237	17.0
Ever married	2843	1377	48.4	609	214.2	417	146.7	192	67.5
Never married	11065	10539	95.3	176	15.9	131	11.8	45	4.1
White									
Total marital status	11227	9850	87.7	572	50.9	426	37.9	146	13.1
Ever married	2457	1256	51.1	507	206.3	369	150.2	138	56.2
Never married	8771	8595	98.0	65	7.4	57	6.5	8	0.9
Black									
Total marital status	1833	1396	76.2	145	79.1	74	40.4	71	38.7
Ever married	175	52	29.7	46	262.9	11	62.9	35	200.0
Never married	1658	1344	81.1	99	59.7	63	38.0	36	21.7
Hispanic									
Total marital status	872	691	79.5	69	81.2	49	58.4	20	22.9
Ever married	213	70	33.0	57	267.6	37	173.7	19	89.2
Never married	659	621	94.1	12	18.2	11	16.7	1	1.5

NOTE: The NLS data are for a 52 week period preceding the survey week. Statistics are for the number of men who had a birth during the period, not the total number of births in the period.

relatively further along in their childbearing or else they are more likely to be understating their likely lifetime fertility.

Tables 22 through 24 present in somewhat greater detail the tempo of the early childbearing and relates this early fertility to marital behavior. It should be emphasized that in these tables, as in all subsequent parity-specific tabulations, we are viewing the fertility behavior of young men and women whose pace of childbearing is above average compared to that which will ultimately be evidenced by their whole cohort. Thus, these tabular results typify the pace and patterning of childbearing for young men and women who are beginning childbearing at relatively young ages. The later childbearers within this cohort in all likelihood will space their children somewhat differently, show different associations between marriage and childbearing, follow different contracepting patterns and, (as will be shown) be more likely to want the pregnancies and births they do conceive.

As may be seen in Tables 22 and 23, young mothers and fathers are about equally likely to legitimize their first birth. Overall, about three quarters of the young men and women who have had a first birth have married by the 1982 survey date (although the marriage is not necessarily to the other parent of the child) and slightly over 60 percent were already married when their first child was born. The post-marriage pattern of first birth occurrences is also generally similar for the two sexes although there is modest support for the notion that fathers have their first child sooner after marriage.

The close similarity between the male and female results is encouraging from a data quality perspective although there is no reason to expect identical patterns. On the average, the young men probably father the children of women who are slightly younger than the average age of the women in this sample.

Table 22 Duration (Months) Between Marriage and First Birth by Current Parity and Race: Young Women

	Total	1 parity	2 or higher parity	Hispanic	White	Black
Percent never married (as of 1982 survey)	24.3	28.1	17.8	22.5	11.5	63.9
Child born before marriage	12.0	7.3	20.2	11.9	10.9	15.3
Percent of births occuring after marriage	63.7	64.6	62.0	65.6	77.6	20.8
Post-marital births	100.0	100.0	100.0	100.0	100.0	100.0
Within 6 months	30.6	28.3	36.5	25.2	30.7	44.6
Within 9 months	44.3	39.7	52.9	43.7	43.6	53.8
Within 12 months	55.8	51.0	64.8	59.9	54.6	65.1
Within 24 months	82.6	77.6	92.1	88.2	81.3	90.8
Population in thousands	4518	2868	1650	397	3098	1030
Sample size	2038	1277	761	344	1031	668

NOTE: CPS racial definitions used. Sample is limited to respondents who have had a first birth.

Table 23 Duration (Months) Between Marriage and First Birth by Current Parity and Race: Young Men

	Total	1 parity	2 or higher parity	Hispanic	White	Black
Percent never married (as of 1982 survey)	25.5	28.8	16.8	20.9	12.4	65.4
Child born before marriage	12.4	8.6	22.2	10.6	10.6	18.3
Percent of births occurring after marriage	62.1	62.6	61.0	68.5	77.0	16.3
Post-marital births	100.0	100.0	100.0	100.0	100.0	100.0
Within 6 months	35.7	32.0	45.7	33.1	35.8	48.3
Within 9 months	48.9	46.4	55.3	56.0	47.2	61.9
Within 12 months	59.1	57.2	64.4	70.6	57.1	68.7
Within 24 months	84.7	82.8	89.6	86.4	83.8	95.2
Weighted population (thousands)	2332	1688	644	206	1583	547
Sample size	1080	747	333	183	536	365

NOTE: CPS racial definitions used. Sample is limited to respondents who have had a first birth.

Table 24 Duration (Months) Between Marriage and First Birth by Educational Attainment of Respondent's Mother

	Male			Female		
Mother's education	Less than 12 years	12 years	13 years or more	Less than 12 years	12 years	13 years or more
Percent never married (as of 1982 survey)	29.4	23.0	16.3	28.1	19.6	15.1
Child born before marriage	12.6	10.7	12.5	13.2	10.6	11.2
Percent of births occurring after marriage	58.0	66.3	71.2	58.7	69.8	73.7
Post-marital births	100.0	100.0	100.0	100.0	100.0	100.0
Within 6 months	26.5	43.6	33.6	33.2	29.1	35.7
Within 9 months	42.2	55.3	41.5	47.2	42.0	44.6
Within 12 months	56.6	63.2	53.3	59.8	53.1	47.6
Within 24 months	84.0	86.2	80.6	82.4	82.1	82.9
Population in thousands	973	922	215	2153	1665	346
Sample size	513	366	97	1090	649	138

NOTE: Sample is limited to respondents who have had a first birth.

It is of some interest to note the enormous racial differentials in the propensity to legitimize the first child--a result generally consistent with other data. Whereas the vast majority of white and Hispanic young men and women legitimize their child, about 65 percent of the black young fathers and mothers are still not married as of the 1982 survey date.

Table 24 briefly summarizes the distinctive differences in first birth patterning by the respondent's social class, in this instance the respondents' mothers' education. For both fathers and mothers, there is a strong inverse association between legitimization and mother's education. Also, respondents of better-educated mothers were more likely to have their first birth occur after marriage. For those who do bear their first child after marriage, no systematic differences appear in the pace of childbearing. By two years after marriage there are no significant differences between young men or women from different educational origins in the pace of childbearing. Please note that an important caveat here and with respect to the two preceding tables is that they are limited to respondents who are known to have had a first birth by 1982.

Tables 25 through 27 summarize some dimensions of the likelihood of having a second birth and the patterning of this parity progression. The earlier noted caveat regarding the pace of early childbearing and the general lack of representativeness of these early childbearing mothers and fathers is undoubtedly even more cogent for this two parity subset. Table 25 summarizes cumulative second birth probabilities for young one-parity women. Generally, the black and Hispanic one-parity women accumulate second births at a more rapid rate than their white counterparts, but the relative gap between the races has diminished considerably by age 25. These data suggest that the earlier noted racial discrepancy between actual and expected fertility may

Table 25 Second Births Per 1000 One Parity Women Cumulated to Successive Ages by Race (One parity sample sizes in parentheses)

	Total		White		Black		Hispanic	
18 and over	128	(678)	92	(269)	169	(292)	204	(117)
19 and over	172	(877)	129	(365)	236	(359)	232	(153)
20 and over	214	(1039)	168	(480)	298	(388)	293	(171)
21 and over	284	(1082)	251	(520)	346	(382)	339	(180)
22 and over	372	(982)	340	(521)	418	(319)	508	(142)
23 and over	450	(752)	430	(407)	481	(235)	541	(110)
24 and over	481	(446)	472	(242)	500	(134)	506	(70)

NOTE: See Table 10 for note on how estimates were derived.

Table 26 Spacing (Months) Between First and Second Birth by Current Parity: Young Women
(Cumulative Percent)

	Total	2 parity women	3 parity or higher
12 months or less	6.8	4.5	14.2
18 months or less	25.8	23.8	32.4
24 months or less	44.4	41.1	55.0
30 months or less	59.0	56.0	68.6
36 months or less	73.5	70.3	83.7
48 months or less	88.0	85.5	96.1
Sample size	761	563	198

NOTE: Limited to respondents who have had a second birth.

Table 27 Spacing (Months) Between First and Second Birth by Current Parity: Young Men

(Cumulative Percent)

	Total	2 parity men	3 parity or higher
12 months or less	12.6	11.1	18.1
18 months or less	36.4	34.2	44.6
24 months or less	56.0	53.5	65.5
30 months or less	69.6	66.8	80.4
36 months or less	80.8	80.3	82.8
48 months or less	90.4	89.8	92.5
Sample size	333	263	70

NOTE: Limited to respondents who have had a second birth.

indeed at least partly reflect variation in the timing of fertility between the races.

Tables 26 and 27 summarize the timing of these progressions of those who do go on to have a second birth. Given the youthfulness of the sample, it is not surprising to note that the pace is rapid. For the women, 44 percent have had a second birth within two years of the first birth and almost 90 percent within four years. The fathers follow a generally similar pattern although their pace is somewhat more rapid. For those who have gone on already to have a third child, the temporal progression to the second birth was even faster. While no useful comparable statistics for a recent period are readily available from other data sets, it is worth noting that this pace of second childbearing far exceeds that reported for any year of birth cohorts "permitted" to progress under more representative biological circumstances. For example, 1975 CPS data for second births which occurred between 1970 and 1974 indicate that 32 percent of the second births occurred within 24 months of the first birth and 78 percent by four years.[8] For second births occurring during the heyday of the baby boom, 1960 to 1964, 49 percent occurred within two years and 83 percent within four years. The CPS data were limited to second births to married women. Data from subsequent NLS survey rounds will be of considerable value for examining the socioeconomic and health consequences of these compressed NLS spacing patterns.

C. Association Between Age at First Conception or Birth, Marital Status and Pregnancy Termination Status

In this section, the patterning of marriage and live births in relation to a young woman's age at first conception is summarized. The complete data relating to age at conception in this section and retrospective reports on wantedness of pregnancy and contraception preceding pregnancy in the following section are available only for the female respondents. Also, it is important to re-emphasize that the information about non-live pregnancy terminations reported here is known to be suspect. The levels of under-reporting on abortion and potential biases resulting from this under-reporting have been detailed earlier. These results are nonetheless reported here for two reasons: first, they provide the reader with additional information regarding the nature and magnitude of any potential bias. Second, the associations between early pregnancy, abortion, pregnancy and birth wantedness and prior reported contraception are of considerable substantive interest.

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[8] See Table 46 in U.S. Bureau of the Census, Trends in Child Spacing, June 1975, Current Population Reports, Series P-20, No. 315, February 1978.

Tables 28 and 29 highlight the powerful association between age at first conception and the probability of either immediately or ever (by 1982) legitimizing the union. Regardless of race, only a small minority of first births conceived before age 17, and a somewhat larger minority of births conceived between the ages of 17 and 19 were conceived after a marriage. For all live births which were conceived before age 17 (and there is no reason to believe that the statistics relating to live birth outcomes are distorted in any major way), only 10 percent were conceived within a marriage. This percent rises to 33 percent for conception between the ages of 17 and 19 and 70 percent for conceptions at age 20 and above.

However, even for those conceiving a first birth at the youngest ages, a large majority of the whites and Hispanics are married by the 1982 survey date. Whether or not they are married to the father of the child cannot be precisely determined.

Tables 30 and 31 provide further evidence on the patterning of reported abortions, miscarriages and live births in relation to the reported age at

Table 28 Age at First Conception by Marital Transition Probabilities and Race: All First Conceptions

	Total conceptions	Conceived after marriage	Conceived before marriage	No marriage by 1982 survey	Sample size
Total race					
Conceived before age 17	100.0	9.0	47.6	43.4	731
Conceived between ages 17 and 19	100.0	32.8	40.1	27.1	1053
Conceived after age 20	100.0	61.9	15.7	22.5	537
White					
Conceived before age 17	100.0	11.2	59.4	29.4	313
Conceived between ages 17 and 19	100.0	37.8	42.8	19.4	567
Conceived after age 20	100.0	68.2	15.1	16.6	352
Hispanic					
Conceived before age 17	100.0	19.2	49.6	31.2	117
Conceived between ages 17 and 19	100.0	41.2	36.2	22.6	183
Conceived after age 20	100.0	56.6	22.1	21.3	74
Black					
Conceived before age 17	100.0	2.0	25.0	73.1	303
Conceived between ages 17 and 19	100.0	9.4	30.8	59.8	305
Conceived after age 20	100.0	23.7	15.3	61.0	113

Table 29 Age at First Conception by Marital Transition Probabilities and Race: Live Births Only

	Total live births	Conceived after marriage	Conceived before marriage	No marriage by 1982	Sample size
Total race					
Conceived before age 17	100.0	10.2	49.6	40.1	614
Conceived between ages 17 and 19	100.0	33.4	43.3	23.3	836
Conceived after age 20	100.0	70.0	17.4	12.6	383
White					
Conceived before age 17	100.0	13.4	65.0	21.5	244
Conceived between ages 17 and 19	100.0	39.3	48.1	12.6	426
Conceived after age 20	100.0	78.3	16.8	4.8	241
Hispanic					
Conceived before age 17	100.0	21.4	51.9	26.7	98
Conceived between ages 17 and 19	100.0	42.7	36.0	21.4	152
Conceived after age 20	100.0	60.7	18.4	20.9	59
Black					
Conceived before age 17	100.0	2.2	24.9	73.0	274
Conceived between ages 17 and 19	100.0	9.0	29.6	61.4	259
Conceived after age 20	100.0	26.4	19.5	54.0	85

Table 30 Distribution of First Pregnancy Outcomes by Age at First Conception and Race

(Sample sizes in parentheses)

	Total pregnancies		Live births	Miscarriages	Abortions
Total race	1000	(2321)	76.9	12.3	10.9
Under 17	100.0	(731)	81.3	7.0	11.6
17-19	100.0	(1053)	78.2	12.7	9.1
20 and over	100.0	(537)	68.7	17.6	13.7
White	100.0	(1232)	73.2	13.6	13.3
Under 17	100.0	(313)	76.1	7.3	16.5
17-19	100.0	(567)	75.4	13.9	10.7
20 and over	100.0	(352)	66.7	18.6	14.6
Black	100.0	(721)	86.7	8.3	5.1
Under 17	100.0	(303)	90.9	5.8	3.5
17-19	100.0	(305)	86.9	8.3	4.8
20 and over	100.0	(113)	73.8	15.9	10.4
Hispanic	100.0	(374)	84.1	10.3	5.6
Under 17	100.0	(117)	83.5	9.4	7.2
17-19	100.0	(183)	84.7	11.8	3.4
20 and over	100.0	(74)	83.7	8.1	8.1

Table 31 First Pregnancy Outcomes by Age at First Conception, Marital Transition Pattern and Race

	Probability of abortion				Probability of live birth			
	Total	Conceived before age 17	Conceived 17-19	Conceived above age 20	Total	Conceived before age 17	Conceived 17-19	Conceived above age 20
Total race	.109 (2321)	.116 (731)	.091 (1053)	.137 (537)	.769	.813	.782	.687
Never married by 1982	.249 (818)	.178 (343)	.222 (338)	.472 (137)	.655	.753	.673	.387
Not married at conception	.076 (845)	.079 (325)	.064 (418)	.123 (102)	.837	.848	.845	.762
Married at conception	.017 (658)	.013 (63)	.015 (297)	.019 (298)	.797	.924	.796	.777
White	.132 (1232)	.166 (313)	.108 (567)	.147 (352)	.732	.761	.754	.667
Never married by 1982	.442 (271)	.366 (89)	.381 (116)	.685 (66)	.448	.558	.489	.194
Not married at conception	.083 (516)	.095 (191)	.065 (260)	.133 (65)	.830	.833	.847	.742
Married at conception	.017 (445)(	.012 (33)	.016 (191)	.019 (221)	.785	.915	.784	.766
Hispanic	.056 (374)	.074 (117)	.035 (183)	.078 (74)	.841	.833	.848	.838
Never married by 1982	.090 (94)	.131 (36)	.063 (45)	- (13)	.768	.712	.801	.821
Not married at conception	.074 (138)	.059 (57)	.056 (63)	- (18)	.838	.871	.843	.697
Married at conception	.016 (142)	.022 (24)	.000 (75)	.040 (43)	.892	.930	.877	.899
Black	.051 (721)	.035 (303)	.049 (305)	.105 (113)	.865	.907	.868	.736
Never married by 1982	.061 (457)	.042 (219)	.044 (178)	.171 (60)	.865	.906	.891	.652
Not married at conception	.037 (193)	.017 (78)	.060 (96)	- (19)	.873	.903	.836	-
Married at conception	.019 (71)	- (6)	.040 (31)	.000 (34)	.843	-	.828	.821

NOTE: Sample size in parentheses.

conception. It may be noted in Table 30 for both black and white young women that the percentage of first pregnancies reported as resulting in a live birth is substantially higher and the percentage resulting in a miscarriage substantially lower for conceptions occurring at younger ages. This miscarriage report appears to be inconsistent with what we would expect, given the greater likelihood of physiological problems being associated with very early pregnancies.

Similarly, Table 31 clarifies the nature of the associations between early conception and associated pregnancy and marital resolutions. Reported first pregnancy abortion probabilities are not sensitive to age at conception *per se*, but they are closely related to the patterning of the marital resolution. For example, *within* age-at-conception categories, women who have not married by 1982 are much more likely to have aborted their first conceptions, and women who were already married at the conception date were, not surprisingly, much less likely to report the pregnancy as aborted.

Within marital resolution categories, particularly for women not married by 1982, however, there is a strong association between age of conception and the likelihood of having an abortion. In this regard, the pattern parallels those reported for premaritally-pregnant women in the Zelnik-Kantner analyses. For the ever-pregnant respondents never married as of 1982, 47 percent of those who conceived their first pregnancy after age 20 reported an abortion compared with 18 percent for conceptions prior to age 17. This differential probably reflects a mixture of reality and mis-reporting. Older never-married women may well be more likely to have an abortion. However, conceptions at older ages are also more likely to have occurred recently and thus abortions associated with these pregnancies may be more likely to be easily recalled. Finally, abortions at older ages may generally be viewed as more socially acceptable, particularly to the respondent's parents, and thus a respondent may be more willing to admit to the event.

The final table in this section reports on the tendency of young women to have repeated abortions or miscarriages. As may be noted in Table 32, the vast majority of young women who have reported on abortions or miscarriages have to date reported only one such event. Only 16 percent of women reporting an abortion have reported having more than one. Twenty-nine percent of all repeated abortions were second or third abortions to a woman. In comparison, 1979 NCHS abortion statistics for 18 to 24 year-old women indicate that 31 percent of abortions in that year were second or higher order abortions.[9] Although the data sets are not entirely comparable, the statistics are sufficiently similar to suggest that the NLS abortion under-reporting is not particularly selective of women having either their first or subsequent abortions.

D. Retrospective Reporting on Pregnancy Wantedness Status and Contraception in Relation to Pregnancy Termination Status and Age at First Conception

The results presented in this section rely heavily on retrospective reports on contraceptive use prior to earlier pregnancies and whether or not the respondent retrospectively recalls whether or not that pregnancy was wanted at that time. As such these data can certainly be subject to errors due to faulty recollection, rationalization after the fact, or in some instances, conscious misreporting of reality.

Regarding the retrospective reporting of contraceptive usage, given the temporal imprecision of the question wording ("before you became pregnant .... did you ever use any methods to keep from getting pregnant?") it is not

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[9] See Table 6 in NCHS *op. cit.*

Table 32 Distribution of Abortions and Miscarriages by Frequency of Event: Young Women

(Numbers in thousands)

	Number of miscarriages			Total miscarriages	Percent with multiple miscarriages
	1	2	3		
Total	761	124	55	1174	19.0
White	586	92	53	929	19.8
Black	127	15	1	160	11.2
Hispanic	48	16	1	83	26.2

	Number of abortions			Total abortions	Percent with multiple abortions
	1	2	3		
Total	643	99	23	910	15.9
White	524	65	20	714	14.0
Black	82	27	0	136	24.8
Hispanic	37	7	2	57	19.6

unlikely that there may be some over-reporting of contraceptive usage if the interest of the reader is in knowing whether or not the respondent was in reality contracepting in the period immediately preceding the pregnancy.

With respect to the retrospective report on wantedness, it is generally (but impressionistically) believed that after-the-fact reports on the wantedness of live births would tend to overstate wantedness, reflecting an unwillingness by women to acknowledge that they did not want a child which now exists. Thus, if there is a reporting bias for the wantedness item, it probably is towards an after-the-fact overstatement rather than understatement.

Table 33 provides a summary of the retrospective reports on contraception and wantedness for all first and second live births and pregnancies. Ever use of contraception preceding a pregnancy is much more prevalent preceding a second than first pregnancy. However, about equal percentages of women indicated that they had stopped using all methods of contraception prior to their first and second pregnancy.

Somewhat disconcertingly, less than 40 percent of all the young women stopped contracepting or were not using contraception prior to a first pregnancy because they wanted to become pregnant. Thus, a minority of the respondents (and also a minority of their partners) wanted the first pregnancy to occur when it did. In contrast, much larger percentages wanted their second pregnancy or birth.

Generally, white women were more likely to have ever used contraception preceding a pregnancy (although this racial differential narrows greatly by the second pregnancy). For Hispanic women, less contraceptive use was associated with the fact that they were more likely to have wanted their pregnancy. Black women, in contrast, were much less likely to have wanted

Table 33 Contraceptive Usage and Pregnancy Wantedness Prior to a First or Second Pregnancy or Birth (Percent Responding Yes to Question): Young Women

	Ever used method prior to (between) pregnancies				Had you stopped all methods prior to pregnancy[1]				Did you stop (or not use) because you wanted to become pregnant				Did your partner want you to become pregnant			
	1st preg.	1st birth	2nd preg.	2nd birth	1st preg.	1st birth	2nd preg.	2nd birth	1st preg.	1st birth	2nd preg.	2nd birth	1st preg.	1st birth	2nd preg.	2nd birth
Total race	47.5	45.5	66.7	67.9	68.2	72.8	69.3	73.3	38.6	41.6	61.3	59.4	47.1	48.5	57.9	56.6
White	51.0	48.7	68.6	70.5	68.7	73.5	70.5	75.8	40.0	43.6	64.1	62.9	47.1	49.2	58.6	58.2
Black	33.7	35.6	58.6	60.0	64.0	65.9	60.1	60.7	26.1	27.5	45.6	42.8	42.4	41.5	49.9	46.6
Hispanic	34.8	31.4	62.3	60.3	76.1	76.6	72.8	72.4	49.2	51.1	61.8	59.9	56.1	56.9	64.9	62.3

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[1] Responses limited to those who had ever used methods.

both their first and second pregnancy even though they were generally less likely to be contracepting.

Table 34 shows how reported pregnancy wantedness is sensitive to the age at which the conception occurred. Conceptions occurring at older ages are much more likely to be reported after the fact as wanted. This is true for women of all races. It is of some importance to note that the overall wantedness statistics for pregnancies resulting in a live birth are generally similar to those for pregnancies which resulted in a miscarriage, suggesting that most miscarriages probably were accurately reported as such and were not in reality abortions. In contrast, very few abortions were reported after the fact as wanted.

Table 35 shows how prior contraceptive usage, not surprisingly, also increases sharply with increasing ages of first conception, undoubtedly reflecting partly the greater number of years in which the older women could have used contraception as well as a greater tendency for older women to use contraception *per se*. This finding is consistent with the much higher wantedness probabilities for women conceiving at older ages.

On an age-specific basis, there is no systematic evidence of contraceptive use being associated with pregnancy outcome. For women who first conceived before age 17 or after their 20th birthday, prior reported contraceptive use rates do not vary according to whether or not the pregnancy resulted in a miscarriage, abortion or live birth. Also, within pregnancy outcome categories, white women were always more likely to have ever used contraception than their black or Hispanic counterparts.

Table 36 shows how even when the sample is limited to women who had not wanted their first pregnancy, the majority of young respondents had not contracepted prior to the pregnancy. For first conceptions prior to age 17

Table 34 Percent Wanting First Pregnancy by Age at First Conception, Race and Termination Status of Pregnancy

Race and age at first conception	Percent wanting first pregnancy							
	Total		Miscarriage		Abortion		Live births	
Total race	42.1	(2304)	43.9	(264)	1.9	(215)	47.5	(1825)
Under 17	32.1	(727)	36.2	(49)	3.5	(65)	35.8	(613)
17-19	39.9	(1045)	35.2	(125)	2.7	(89)	45.0	(831)
20 and over	58.1	(532)	59.7	(90)	0.0	(61)	69.4	(381)
White	43.3	(1224)	43.6	(162)	1.6	(154)	50.8	(908)
Under 17	35.1	(311)	-	(21)	1.55	(46)	41.8	(244)
17-19	39.0	(565)	31.6	(77)	3.1	(63)	45.4	(425)
20 and over	58.0	(348)	60.7	(64)	0.0	(45)	70.3	(239)
Black	31.7	(717)	40.7	(27)	1.8	(38)	32.5	(615)
Under 17	32.8	(301)	-	(17)	-	(11)	21.7	(273)
17-19	36.3	(303)	(44.7	(29)	-	(17)	37.0	(257)
20 and over	48.1	(113)	-	(18)	-	(10)	56.7	(85)
Hispanic	57.3	(369)	54.8	(38)	9.1	(24)	60.9	(307)
Under 17	47.1	(117)	-	(11)	-	(8)	51.7	(98)
17-19	56.3	(179)	-	(19)	-	(10)	59.2	(150)
20 and over	77.4	(73)	-	(8)	-	(6)	80.6	(59)

Table 35 Percent Ever Using Contraception Preceding First Pregnancy by Age at First Conception,[a] Race and Termination Status of Pregnancy

Race and age at first conception	Percent ever using contraception			
	Total	Miscarriage	Abortion	Live births
Total race	44.4	54.0	49.5	42.1
Under 17	21.6	22.9	19.8	21.9
17-19	44.8	53.9	56.0	42.1
20 and over	70.5	69.9	70.1	70.8
White	49.0	57.8	50.6	47.0
Under 17	22.6	-	21.5	22.6
17-19	48.3	57.2	58.7	45.1
20 and over	73.5	71.0	69.5	75.4
Black	35.2	36.3	42.3	34.7
Under 17	22.7	-	-	22.7
17-19	39.6	23.7	-	41.7
20 and over	60.4	-	-	58.3
Hispanic	26.5	47.6	40.9	23.4
Under 17	12.9	-	-	12.9
17-19	25.5	-	-	20.0
20 and over	51.2	-	-	45.8

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[a] Age at inception of pregnancy is defined as respondent's age nine months preceding live birth date or specified number of months preceding termination of pregnancy which did not result in a live birth. Sample of women 17 to 24 at 1982 survey date who have had a first pregnancy. Excludes women pregnant for the first time at 1982 survey date. See Table 33 for sample sizes.

Table 36 Contraceptive Usage Preceding First Pregnancy for Young Women Not Wanting Their First Pregnancy by Age at First Conception,[a] Race and Termination Status of First Pregnancy

(Percent ever contracepting prior to first pregnancy)

Race and age at conception	Total		Aborted first pregnancy		Had miscarriage		Had live birth	
Total race	40.2	(1317)	51.2	(208)	58.3	(148)	34.3	(967)
Under 17	20.2	(497)	23.8	(61)	15.3	(32)	19.9	(404)
17-19	43.8	(603)	57.9	(86)	59.3	(72)	37.9	(445)
20 and over	69.3	(217)	70.3	(61)	88.6	(38)	62.4	(118)
White	44.3	(684)	52.5	(150)	63.0	(88)	37.5	(446)
Under 17	21.1	(204)	25.4	(45)		(13)	19.9	(146)
17-19	46.4	(331)	60.5	(60)	61.6	(47)	39.3	(224)
20 and over	70.9	(149)	69.3	(45)	90.2	(28)	65.1	(76)
Black	32.8	(479)	43.4	(37)	36.1	(37)	31.6	(405)
Under 17	20.5	(234)	-	(10)	-	(11)	20.9	(213)
17-19	38.8	(195)	-	(17)	-	(17)	40.2	(161)
20 and over	66.9	(50)	-	(10)	-	(9)	60.4	(31)
Hispanic	21.5	(159)	41.2	(22)	52.8	(17)	14.3	(120)
Under 17	11.2	(61)	-	(6)	-	(8)	12.5	(47)
17-19	26.4	(79)	-	(10)	-	(8)	14.4	(61)
20 and over	39.4	(19)	-	(6)	-	(1)	-	(12)

[a] Age at beginning of pregnancy. Sample of women 17 to 24 at 1982 survey date who have a first pregnancy. Sample sizes in parentheses.

which were reported after the fact as not wanted, only 20 percent of respondents reported that they had been using contraception. This percentage increases to about 70 percent for women not wanting their pregnancy who conceived after age 20. It is of some interest to note that the substantial black-white differentials noted for so many other of the fertility statistics are not in evidence here. Once one limits the sample to black and white women who retrospectively report they did not want the pregnancy, racial differences in contraceptive use tend to vanish. In contrast, Hispanic women who did not want their first pregnancy were substantially less likely than their black or white counterparts to have used contraception.

Some rational consistency does appear in the association between prior contraceptive use and pregnancy outcome for these women who did not want their first pregnancy. For all races and, overall, for all ages at conception, women who aborted their first pregnancy were more likely to have been using contraception before the pregnancy than women whose pregnancy resulted in a live birth.

Overall, women who had a miscarriage were most likely to have been using contraception, a finding which may reflect the possibility that women with known health problems were more likely to be using contraception in order to avoid a pregnancy.

Table 37 provides a final summary table on the associations between pregnancy wantedness, pregnancy outcome and age at first conception. The reported abortion rate is clearly closely associated with retrospectively reported pregnancy wantedness, particularly for white women, and less for black and Hispanic women. From a different perspective, over 80 percent of those who report after the fact that they didn't want their first pregnancy, did not have an abortion.

Table 37 Termination Status of First Pregnancy by Age at Conception, Wantedness Status and Race

Race and age at conception	Percent having abortion			Percent with miscarriage			Percent with live birth			Sample sizes		
	Total	Wanted pregnancy	Didn't want pregnancy	Total	Wanted pregnancy	Didn't want pregnancy	Total	Wanted pregnancy	Didn't want pregnancy	Total	Wanted pregnancy	Didn't want pregnancy
Total race	11.0	0.5	18.6	12.0	12.6	11.7	77.0	86.9	69.7	2308	991	1317
Under 17	11.8	1.0	16.8	6.9	7.8	6.4	81.4	91.2	76.8	731	234	497
17-19	9.1	0.6	14.8	12.6	11.2	13.6	78.2	88.2	71.6	1045	442	603
20 and over	13.7	0.0	32.7	17.1	17.5	16.6	69.2	82.5	50.7	532	315	217
White	13.4	0.5	23.2	13.4	13.4	13.3	73.3	86.0	63.6	1226	542	684
Under 17	16.8	0.6	25.5	7.2	8.3	6.6	76.0	91.1	67.9	313	109	204
17-19	10.8	0.9	17.2	13.8	11.4	15.4	75.4	87.8	67.4	565	234	331
20 and over	14.8	0.0	35.3	18.0	18.7	17.0	67.2	81.3	47.7	348	199	149
Black	5.1	0.4	7.3	8.3	10.7	7.2	86.6	88.9	85.5	718	239	479
Under 17	3.5	1.4	4.1	5.6	7.6	5.0	90.9	91.0	90.9	302	68	234
17-19	4.9	0.0	7.7	8.4	10.7	7.1	86.7	89.3	85.2	303	108	195
20 and over	10.5	0.0	20.4	15.9	14.8	16.9	73.6	85.2	62.5	113	63	50
Hispanic	5.3	0.6	11.4	10.0	9.3	10.9	84.8	90.0	77.7	370	211	159
Under 17	7.3	2.4	11.7	9.2	5.9	12.0	83.5	91.7	76.4	118	57	61
17-19	3.5	0.0	8.1	11.2	11.0	11.3	85.3	89.0	80.6	179	100	79
20 and over	5.9	0.0	-	8.6	9.8	-	85.5	90.2	-	73	54	19

The overall as well as the race and age-specific miscarriage rates do not appear to be related in any significant or systematic way to the reported wantedness or nonwantedness of the pregnancy. This is a further piece of evidence in support of the notion that reported miscarriages for the most part were probably being honestly reported, and were not in actuality induced abortions.

E. Current Sexual Activity and Contraceptive Usage

Whereas the preceding section focused on retrospective reports on contraception usage for time periods which could be several years in the past, the results presented in this section relate to sexual activity and contraception use for the month preceding the 1982 survey week. Most of the results presented here will focus on never-married respondents. Generally, the tables will present separate tabulations for youth age 17 to 20 and age 21 and over. From the perspective of adolescent sexual activity, the tabulations of perhaps the greatest interest are those for never-married 17-to-20 year-old respondents.

Tables 38 through 40 provide summary measures of the extensiveness of current sexual activity for never-married respondents by race and age, and Table 41 presents in somewhat greater detail a distribution of the contraceptive methods used by the sexually active. Overall, about 70 percent of the never-married males and 55 percent of the females in the sample are currently (within the past thirty days) sexually active. Reported sexual activity levels are highest for the black males and females and lowest for the white males and Hispanic females. By far the greatest within-race disparity was for the Hispanic respondents; 72 percent of the males but only 44 percent of the females have been sexually active in the past month.

Table 38 Summary of Contraceptive Usage and Sexual Activity by Race/Ethnicity and Sex: All Respondents

	Total population								Sexually active							
	Total		White		Hispanic		Black		Total		White		Hispanic		Black	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Not sexually active	26.4	31.2	28.6	32.5	22.6	36.0	14.5	21.6	-	-	-	-	-	-	-	-
Sex. active - no contraception	16.3	8.8	15.2	8.5	20.5	9.3	20.3	10.7	22.1	12.8	21.3	12.6	26.5	14.5	23.8	13.6
Currently pregnant	3.3	5.8	3.0	5.4	5.2	8.0	4.2	7.1	4.5	8.4	4.2	8.0	6.7	12.5	4.9	9.0
Sterilized	1.3	2.8	1.4	2.6	1.1	2.7	1.1	3.9	1.8	4.1	1.9	3.9	1.5	4.2	1.3	5.0
Effective contrac.[a]	45.4	46.5	45.1	46.0	39.7	39.8	50.4	52.5	61.7	67.7	63.2	68.2	51.3	60.7	59.0	67.0
Ineffective contrac.[a]	7.3	4.8	6.6	4.9	10.8	5.1	9.5	4.2	9.9	7.0	9.3	7.2	14.0	8.0	11.1	5.4
Sample size	6004	5977	3576	3538	921	939	1525	1517	4661	4288	2660	2521	714	592	1303	1190
	Never married respondents								Never married sexually active respondents							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Not sexually active	31.8	46.1	35.1	49.7	27.7	56.3	16.2	26.2	-	-	-	-	-	-	-	-
Sex. active - no contraception	16.8	7.1	15.7	6.6	22.2	6.7	20.3	9.7	24.6	13.1	24.2	13.2	30.7	15.4	24.2	13.1
Currently pregnant	0.9	1.8	0.3	0.9	2.5	2.8	2.9	5.7	1.3	3.4	0.5	1.9	3.4	6.4	3.5	7.7
Sterilized	0.4	0.6	0.3	0.3	0.5	1.1	0.9	1.8	0.6	1.1	0.4	0.5	0.7	2.6	1.0	2.4
Effective contrac.[a]	42.4	40.1	41.5	38.1	35.6	28.2	50.1	52.9	62.2	74.5	63.9	75.8	49.2	64.7	59.8	71.7
Ineffective contrac.[a]	7.7	4.3	7.1	4.4	11.5	4.8	9.6	3.7	11.3	7.9	10.9	8.7	16.0	10.9	11.5	5.0
Sample size	4684	3760	2657	2040	712	564	1329	1170	3397	2181	1779	1090	517	242	1113	861

[a] Effective contraception includes the following methods: pill, condom, foam, jelly or cream alone, suppository/insert, diaphragm, douching after intercourse and IUD. Ineffective contraception refers to natural family planning (or safe period by temperature or cervical mucus test), rhythm (or safe period by calendar), withdrawal, abstinence (or intercourse more than one month apart) and any other unlisted method. In instances where the respondent was using both effective and ineffective methods, he/she is included only in the former category.

Table 39 Summary of Contraceptive Usage and Sexual Activity: Respondents Age 17-20

	Total population								Sexually active							
	Total		White		Hispanic		Black		Total		White		Hispanic		Black	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Not sexually active	34.9	44.7	38.7	46.1	27.7	50.9	16.4	32.9	-	-	-	-	-	-	-	-
Sex. active - no contraception	14.7	8.5	13.5	8.8	19.9	8.7	18.9	8.0	22.6	15.4	22.0	16.3	27.5	17.8	22.6	11.9
Currently pregnant	1.8	4.9	1.4	4.4	4.4	7.9	3.0	6.5	2.8	8.9	2.3	8.2	6.1	16.1	3.6	9.7
Sterilized	0.6	0.4	0.6	0.4	0.7	0.4	0.7	0.6	0.9	0.7	0.9	0.7	1.0	0.8	[illegible]	1.0
Effective contrac.[a]	39.8	37.5	38.3	36.4	36.5	27.0	50.8	48.2	61.[illegible]	67.7	62.5	67.5	50.5	55.0	60.7	71.8
Ineffective contrac.[a]	8.1	4.0	7.5	3.9	10.8	5.1	10.3	3.8	12.5	7.2	12.3	7.3	14.9	10.3	12.3	5.6
Sample size	2758	2676	1543	1490	476	477	743	717	1942	1566	992	653	344	236	615	484
	Never married respondents								Never married sexually active respondents							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Not sexually active	35.7	53.8	40.7	56.8	30.5	63.1	16.6	34.9	-	-	-	-	-	-	-	-
Sex. active - no contraception	14.9	7.1	13.6	7.2	21.0	6.2	18.9	8.0	23.5	15.4	23.0	16.6	30.3	16.7	22.7	12.3
Currently pregnant	0.9	2.0	0.5	1.2	2.5	3.8	2.4	5.3	1.4	4.4	0.8	2.9	3.6	10.4	2.8	8.2
Sterilized	0.3	0.3	0.2	0.2	0.4	0.0	0.7	0.6	0.5	0.5	0.4	0.5	0.6	0.0	0.9	0.9
Effective contra.[a]	39.2	33.1	37.6	31.0	33.6	22.1	51.1	47.4	61.9	71.7	63.4	71.7	48.4	59.7	61.3	72.8
Ineffective contra.[a]	8.1	3.7	7.3	3.6	12.0	4.9	10.3	3.8	12.7	8.0	12.4	6.3	17.2	13.2	12.4	5.8
Sample size	2575	2183	1434	1156	426	375	724	660	1768	1093	883	529	297	140	597	431

[a] See footnote a, Table 38 for a definition of effective/ineffective contraceptive methods.

Table 40 Summary of Contraceptive Usage and Sexual Activity: Respondents Age 21 and Over

	Total population								Sexually active							
	Total		White		Hispanic		Black		Total		White		Hispanic		Black	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Not sexually active	18.7	19.3	19.8	20.4	16.9	22.5	12.8	11.4	-	-	-	-	-	-	-	-
Sex. active - no contraception	17.7	9.1	16.7	8.3	21.3	9.8	21.6	13.1	21.7	11.3	20.9	10.4	25.6	12.6	24.8	14.8
Currently pregnant	4.7	6.6	4.5	6.3	6.3	8.1	5.3	7.5	5.7	8.1	5.6	7.9	7.6	10.5	6.0	5.4
Sterilized	2.0	4.9	2.1	4.6	1.8	5.0	1.5	6.9	2.5	6.1	2.6	5.8	2.1	6.4	1.7	7.8
Effective contra.[a]	50.5	54.6	51.1	54.6	42.9	49.5	50.1	56.5	62.1	67.6	63.7	68.7	51.7	63.9	57.4	63.7
Ineffective contrac.[a]	6.5	5.5	5.8	5.7	10.8	5.2	8.8	4.6	8.0	6.9	7.3	7.2	13.0	6.7	10.0	5.2
Sample size	3246	3301	2028	2048	445	462	782	800	2719	2722	1668	1668	370	356	688	706
	Never married respondents								Never married sexually active respondents							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Not sexually active	25.8	34.8	26.0	39.0	23.6	44.1	15.6	15.4	-	-	-	-	-	-	-	-
Sex. active - no contraception	19.2	7.0	18.3	5.8	[illegible]	7.7	21.9	11.8	25.8	10.8	25.4	9.5	31.2	13.8	25.9	14.0
Currently pregnant	0.8	1.6	0.1	0.4	[illegible]	1.4	3.6	6.1	1.1	2.4	0.2	0.7	3.2	2.4	4.3	7.2
Sterilized	0.5	1.0	0.4	0.3	0.9	3.2	1.1	3.3	0.7	1.6	0.5	0.5	1.2	5.7	1.3	3.9
Effective contrac.[a]	46.5	50.4	46.5	48.9	38.4	39.1	49.0	59.7	62.6	77.4	64.5	80.2	50.2	69.9	58.1	70.6
Ineffective contrac.[a]	7.3	5.1	6.8	5.5	10.9	4.5	8.8	3.7	9.8	7.9	9.4	9.1	14.2	8.1	10.4	4.3
Sample size	2109	1577	1223	884	286	189	605	510	1629	1088	896	561	220	102	516	430

[a] See footnote a, Table 38 for a definition of effective/ineffective cont-aceptive methods.

Table 41 Distribution of Current Contraceptive use of Never Married Sexually Active Respondents by Sex of Respondent, Race/Ethnicity and Age

	17 to 20 Year Olds								21 and Over							
	Male				Female				Male				Female			
	Total	White	Black	Hispanic	Total	White	Black	Hispanic	Total	White	Black	Hispanic	Total	White	Black	Hispanic
Pill	28.7	30.3	24.1	24.9	55.7	55.9	59.2	41.8	38.5	41.4	29.2	27.4	55.1	55.4	54.8	55.7
Condom, rubber	33.7	34.2	36.3	21.1	8.1	8.5	6.6	6.6	21.8	20.9	26.2	18.7	5.8	7.1	2.3	2.8
Foam	2.2	2.0	3.0	1.9	1.2	1.1	1.5	1.7	1.8	1.8	1.7	1.5	1.6	1.6	1.5	0.8
Jelly or cream alone	0.7	0.5	0.8	1.2	0.9	0.5	2.7	0.0	1.3	1.1	2.5	0.4	0.4	0.0	1.8	0.0
Suppository or insert	1.0	1.1	0.3	0.7	0.4	0.3	0.8	0.0	1.2	1.2	1.2	1.6	1.1	1.1	1.1	0.0
Diaphragm with or without jelly or cream	1.7	1.8	1.4	1.6	5.1	5.8	2.8	3.2	4.9	5.7	2.4	4.6	11.4	14.8	2.5	6.5
Douching after intercourse	0.6	0.4	1.1	2.1	1.5	1.0	3.0	0.4	0.4	0.2	1.7	0.0	0.8	0.2	2.9	0.0
IUD, coil, loop	0.7	0.7	1.1	0.3	2.2	1.2	4.6	6.4	2.1	2.1	2.3	1.2	4.4	4.0	5.4	5.4
Operation-female sterilization, tubes tied	0.7	0.7	1.0	0.2	0.7	0.4	1.7	0.0	0.4	0.2	1.2	0.4	1.4	0.2	4.1	4.7
Operation-male sterilization, vasectomy	0.1	0.0	0.3	0.6	0.4	0.5	0.0	0.0	0.4	0.4	0.2	1.0	0.4	0.3	0.2	1.8
Natural family planning, safe period or cervical mucus test	2.5	1.9	4.0	5.0	1.5	1.4	1.2	3.6	2.1	1.7	3.2	2.5	1.5	1.7	0.6	4.0
Rhythm or safe period by calendar	3.9	4.1	2.8	5.0	4.5	4.8	3.0	6.3	4.2	4.1	4.2	5.3	5.2	6.2	2.5	5.2
Withdrawal	5.6	5.6	5.3	5.5	3.6	4.2	1.8	3.3	4.9	4.6	5.1	8.1	4.0	5.3	0.8	0.7
Abstinence/intercourse more than one month apart	4.9	5.2	3.8	4.2	3.3	3.2	3.2	5.1	3.8	4.2	2.1	3.6	3.4	3.3	2.5	1.7
Other	1.4	1.4	1.1	2.3	0.3	0.3	0.3	0.0	0.8	0.7	1.0	0.7	0.2	0.0	0.5	1.8
Sterile	0.8	0.7	1.3	0.8	0.9	0.7	1.7	0.0	0.8	0.6	1.4	1.4	1.7	0.5	4.3	6.5
Currently pregnant	1.4	0.8	2.8	3.7	4.4	2.9	8.0	10.8	1.1	0.0	4.9	3.1	2.5	0.7	7.9	2.1
Not using a method	23.6	23.0	23.1	30.3	15.5	16.6	10.9	16.8	25.9	25.5	25.7	31.2	10.8	9.4	14.0	13.6

NOTE: Percentages exceed 100 percent because respondent may report the use of more than one method. Definition of current sexual activity and contraceptive usage refers to behavior in past month.

Shifting to the younger half of the sample, about 63 percent of the never-married 17 to 20 year-old men and 46 percent of their female counterparts have engaged in sex in the past month. The racial patterns parallel those described for the overall never-married sample, but the levels of sexual activity are moderately lower.

Even among the older half of the NLS cohort, substantial proportions of the never-married are not currently sexually active; about one of every four never-married 21 to 24 year-old males and one of every three females is currently not sexually active. In this regard, there continue to be major racial/ethnic differences, as about 40 percent of the never-married white and 44 percent of the Hispanic females but only 15 percent of the black women of these ages are not active sexually.

Focusing specifically on the never-married sexually active population, it may be seen that there are significant differences in the ability or willingness of young men and women to use contraception. Among the younger 17 to 20 year-old sexually active youth, 24 percent of the males and 15 percent of the females are not using any contraception and an additional 13 percent of the males and 8 percent of the females are using a relatively ineffective method of birth control. Only about 60 percent of the sexually active males and 70 percent of the females are generally using an effective contraceptive method.

These statistics vary widely by race and ethnicity. Only about half of the younger Hispanic men are using an effective form of contraception compared with slightly over 60 percent of the black and white youth. The younger women follow parallel patterns but at slightly higher levels--about 70 percent of the black and white young women and 60 percent of their sexually active never-married Hispanic counterparts. In general, at any given time, relatively large proportions of sexually active male and female teenagers are not protected against an unwanted pregnancy.

Somewhat surprisingly, sexually active never-married young adults age 21 and over are only marginally more likely to be contracepting effectively than the younger respondents. There is no evidence to suggest that there is any significant learning process underway associated with maturation. For both younger and older males, about 62 percent are using an effective form of family planning and for females the percent increases only modestly with age from 72 to 77 percent.

As with the younger respondents, significant racial differences appear as 80 percent of white females are contracepting effectively, compared with 70 percent of the black and Hispanic women. Even at these older ages, only 50 percent of sexually active Hispanic males are using effective contraception compared with 58 percent of blacks and a still low 65 percent of whites. The combined high levels of sexual activity for all of these never-married youth and relatively large proportions not using effective contraception are certainly consistent with and predictive of a relatively high proportion of out-of-wedlock conceptions in this age group.

Table 41 provides somewhat greater detail about the contraceptive methods used by these sexually active youth. For both older and younger women, the pill is by far the most popular method, its use being equally prevalent among the older and younger women.[10] Also, with the sole exception of younger Hispanic women, it is used equally by all the racial and ethnic groups. Although we have no exactly comparable statistics from the data sets, this pattern of the pill being the most popular contraceptive is certainly consistent with the statistics for women age 15-19 in the 1979 Zelnik and Kantner study.[11] The level of pill use in the NLS is somewhat higher, but that may reflect the older average age of the NLS respondent. The second most commonly used method for the older women is the diaphragm, a medically prescribed method, whereas the second most common method cited for the younger women is the condom, which of course is more readily accessible to younger respondents who may not wish to have contact with the medical establishment. The Zelnik and Kantner study suggests a much greater reliance by young females on the condom than suggested by the NLS data, but again, that may also reflect the younger age of the respondents in their study.

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[10] Respondents may cite more than one method as being commonly used.

The most commonly used contraceptive by the older males also is the pill, but a much larger proportion are also using the condom. For younger males, not surprisingly, the condom is the most commonly-used method, no doubt related to its easy access and the perhaps more temporary nature of adolescent male sexual relationships. In this regard, it is likely that many of the younger males are unaware of whether or not their sexual partners are using contraceptive methods.

Tables 42 through 45 summarize the extent to which the level of teenage and young adult sexual activity is sensitive to the youth's religious affiliation. In general, younger (17-20 year-old) men and women in the "other" religious category, most of whom are acknowledging no religious affiliation, tend to be more sexually active. Among the older youth, this religious differential only appears for the women. Focusing more specifically on the sexually active, there are no systematic differences in contraceptive usage by religious affiliation. As may be further noted in Table 45, there

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[11] Table 11 in Zelnik and Kantner _op_. _cit_.

Table 42 Summary of Sexual Activity and Contraceptive Usage of Never Married Respondents by Religious Affiliation and Sex

	All never married			Sexually active never married		
	Protestant	Catholic	Other	Protestant	Catholic	Other
Male	100.0	100.0	100.0	100.0	100.0	100.0
Not sexually active	33.4	32.3	25.7	-	-	-
Sexually active - no contraception	15.5	18.8	17.4	23.3	27.8	23.5
Currently pregnant	0.9	0.7	1.1	1.3	1.1	1.4
Effective contraception	41.6	39.2	43.4	62.5	57.9	58.4
Ineffective contraception	8.6	8.9	12.4	12.9	13.2	16.7
Sample size	2422	1419	765	1740	1007	577
Female	100.0	100.0	100.0	100.0	100.0	100.0
Not sexually active	47.5	48.7	34.5	-	-	-
Sexually active - no contraception	6.9	7.2	7.7	13.2	14.0	11.8
Currently pregnant	2.2	1.1	2.3	4.2	2.2	3.5
Effective contraception	38.6	37.6	47.1	73.5	73.3	71.9
Ineffective contraception	4.8	5.4	8.4	9.1	10.6	12.9
Sample size	2050	1207	445	1216	607	304

NOTE: See Table 38.

Table 43 Summary of Sexual Activity and Contraceptive Usage of Never Married Respondents by Religious Affiliation and Sex: Respondents Age 17-20

	All never married			Sexually active never married		
	Protestant	Catholic	Other	Protestant	Catholic	Other
Male	100.0	100.0	100.0	100.0	100.0	100.0
Not sexually active	38.3	38.6	26.6	-	-	-
Sexually active - no contraception	14.0	16.2	15.9	22.6	26.4	21.7
Currently pregnant	0.7	1.0	1.4	1.1	1.6	2.0
Effective contraception	38.1	34.9	44.2	61.8	56.9	60.2
Ineffective contraception	9.0	9.3	11.9	14.5	15.1	16.2
Female	100.0	100.0	100.0	100.0	100.0	100.0
Not sexually active	54.8	55.7	45.0	-	-	-
Sexually active - no contraception	6.9	7.3	7.6	15.3	16.5	13.8
Currently pregnant	2.2	1.4	2.8	4.9	3.2	5.1
Effective contraception	31.9	30.9	38.6	70.6	69.8	70.1
Ineffective contraception	4.2	4.7	6.1	9.2	10.5	11.0

NOTE: See Table 38

Table 44 Summary of Sexual Activity and Contraceptive Usage of Never Married Respondents by Religious Affiliation and Sex: Age 21 and Over

	All never married			Sexually active never married		
	Protestant	Catholic	Other	Protestant	Catholic	Other
Male	100.0	100.0	100.0	100.0	100.0	100.0
Not sexually active	26.9	24.3	24.9	-	-	-
Sexually active - no contraception	17.6	22.2	18.8	24.0	29.3	25.1
Currently pregnant	1.1	0.4	0.7	1.5	0.6	1.0
Effective contraception	46.4	44.7	42.6	63.4	59.0	56.7
Ineffective contraception	8.1	8.4	12.9	11.1	11.1	17.2
Female	100.0	100.0	100.0	100.0	100.0	100.0
Not sexually active	36.8	38.0	19.5	-	-	-
Sexually active - no contraception	6.9	6.9	7.8	10.9	11.2	9.7
Currently pregnant	2.3	0.6	1.6	3.6	1.0	2.0
Effective contraception	48.3	47.8	59.2	76.5	77.1	73.6
Ineffective contraception	5.7	6.6	11.8	9.0	10.7	14.7

NOTE: See Table 38.

Table 45 Contraceptive Usage of Never Married Sexually Active Respondents by Sex, Religious Affiliation and Age

	17 to 20 Year Olds						21 Years and Over					
	Male			Female			Male			Female		
	Protestant	Catholic	Other	Protestant	Catholic	Other	Protestant	Catholic	Other	Protestant	Catholic	Other
Pill	27.9	29.1	30.5	57.8	54.6	50.7	42.2	36.5	32.3	57.9	54.4	47.2
Condom, rubber	36.1	31.5	29.9	8.4	9.1	4.7	22.1	22.5	19.8	4.8	6.4	7.9
Foam	1.4	2.6	4.2	1.1	1.2	1.6	2.7	0.6	1.4	1.5	1.2	2.5
Jelly or cream alone	0.5	0.3	2.0	1.0	0.0	3.0	1.1	1.2	2.1	0.7	0.0	0.5
Suppository or insert	1.1	0.3	1.5	0.3	0.0	1.5	1.5	1.3	0.3	0.4	0.9	3.9
Diaphragm with or with out jelly or cream	1.2	1.7	3.4	3.3	4.0	13.5	3.2	3.9	10.8	9.6	11.6	17.3
Douching after intercourse	0.6	0.5	1.1	1.7	1.1	1.6	0.5	0.2	0.6	1.1	0.3	0.9
IUD, coil, loop	0.6	0.3	2.0	1.6	3.3	2.1	1.6	3.0	1.7	4.4	4.9	3.9
Operation-female sterilization, tubes tied	1.0	0.4	0.1	1.2	0.0	0.4	0.5	0.2	0.4	1.9	0.6	1.2
Operation-male sterilization, vasectomy	0.1	0.1	0.1	0.7	0.0	0.0	0.7	0.1	0.1	0.2	0.8	0.1
Natural family planning, safe period or cervical mucus test	2.1	3.2	2.7	1.2	2.0	1.4	1.9	3.1	0.8	1.2	1.4	2.9
Rhythm or safe period by calendar	3.0	4.2	6.4	4.2	5.8	2.9	3.4	6.0	3.4	3.6	7.5	6.5
Withdrawal	5.9	6.2	3.6	3.5	4.5	2.1	3.5	5.8	6.9	2.1	7.6	3.5
Abstinence/intercourse more than one month apart	5.5	3.3	5.7	2.5	2.8	7.2	2.7	4.1	6.2	3.4	2.1	5.7
Other	1.2	1.4	2.2	0.0	0.6	0.8	1.1	0.2	0.9	0.2	0.3	0.1
Sterile	1.2	0.4	0.2	1.6	0.0	0.4	1.2	0.3	0.4	2.0	1.4	1.3
Currently pregnant	1.1	1.6	2.0	4.9	3.2	5.1	1.5	0.6	1.0	3.6	1.0	2.0
Not using a method	22.6	26.4	21.7	15.3	16.5	13.8	24.0	29.3	25.1	10.9	11.2	9.7

are no significant differences in pill use between protestants, Catholics and those expressing no religion, regardless of age or sex.

The above is not to suggest, however, that there is no important religious effect. As Tables 46 and 47 amply demonstrate, there are important variations in sexual behavior which are related to the strength of one's religious attachment (proxied for here by church attendance), independent of which specific denomination one belongs to. For non-married male and female respondents, increasing frequency of church attendance is powerfully associated with lesser sexual activity, regardless of religious affiliation. Also, (in Table 47) it may be noted that sexually active regular church attenders are somewhat less likely to use the pill, more likely to use a condom or not be using any method of contraception. Thus, as will be suggested further in the following multivariate analyses, the religious factor continues to be of some importance in influencing teenage and young adult sexual behavior in the 1980's.

Table 48 suggests that sexual behavior also is sensitive to social class differentials, a factor also clarified to a greater extent in the regressions which follow. Young men and women whose mothers have attended college are less likely to be sexually active than those whose mothers have completed only high school. Children of women who are high school dropouts have the highest levels of current sexual activity. There are, however, no major differences in contraceptive efficacy along this education dimension except that children of a college educated mother are slightly less likely not to be using any contraceptive method.

Finally, as Table 49 suggests, the connection between sexual activity, contraceptive use and shorter term fertility planning for adolescents, while far from perfect, is also far from random. For example, young males and

Table 46 Sexual Activity/Contraceptive Usage of White Never Married Respondents by Sex, Religious Affiliation and Frequency of Church Attendance

	Protestants				Catholics				Other/no religion			
	Total	Weekly attendance	Attend quarterly	Attend less than quarterly	Total	Weekly attendance	Attend quarterly	Attend less than quarterly	Total	Weekly attendance	Attend quarterly	Attend less than quarterly
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			100.0
Not sexually active	38.4	56.9	39.7	25.8	34.2	43.3	32.0	25.8	26.9			24.9
Sexually active - no contraception	14.3	11.7	11.7	17.3	18.0	18.9	17.3	17.4	15.9			16.0
Currently pregnant	0.2	0.1	0.0	0.3	0.3	0.0	2.0	0.0	0.5			0.6
Effective contraception	39.5	26.3	39.8	47.9	39.1	30.0	41.9	48.0	45.3			47.7
Ineffective contraception	7.6	5.0	8.8	8.6	8.1	7.9	6.8	8.8	11.4			11.4
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			100.0
Not sexually active	54.2	67.0	51.9	42.9	48.3	59.5	40.6	34.1	37.3			33.3
Sexually active - no contraception	6.4	6.1	5.0	7.5	7.0	5.8	7.6	8.5	6.7			6.4
Currently pregnant	1.1	1.5	0.0	1.3	0.0	0.7	1.2	0.1	1.2			1.6
Effective contraception	34.1	22.0	36.7	44.5	38.9	29.9	42.8	51.1	46.6			49.6
Ineffective contraception	4.2	3.5	6.4	3.7	5.3	4.1	7.7	6.3	8.2			9.2

NOTE: See Table 38.

Table 47 Contraceptive Usage of Never-Married Sexually Active White Respondents by Sex, Religious Affiliation and Church Attendance

	Male							Female						
	Protestant			Catholic			Other or no religion	Protestant			Catholic			Other or no religion
	Weekly attendance	Quarterly attendance	Attends less than quarterly	Weekly attendance	Quarterly attendance	Attends less than quarterly		Weekly attendance	Quarterly attendance	Attends less than quarterly	Weekly attendance	Quarterly attendance	Attends less than quarterly	
Pill	31.3	36.8	39.7	33.6	28.9	36.0	34.7	53.7	57.6	59.3	53.9	51.6	59.2	48.7
Condom, rubber	31.7	33.6	24.9	22.9	32.3	30.2	25.6	10.0	7.8	6.5	10.9	10.0	5.9	6.9
Foam	0.9	0.1	3.0	2.4	0.0	1.7	2.5	4.2	1.2	0.1	0.9	2.2	0.7	1.7
Jelly or cream alone	0.9	0.0	0.4	0.1	0.0	1.4	2.1	0.0	0.0	0.0	0.0	0.0	0.0	1.5
Suppository or insert	1.7	0.9	1.9	0.0	0.3	1.5	0.9	0.1	0.0	0.2	0.0	0.0	1.0	2.9
Diaphragm with or without jelly or cream	2.3	2.2	2.7	2.2	2.4	3.0	7.7	3.7	11.4	10.6	5.5	10.6	9.8	18.6
Douching after intercourse	0.0	0.3	0.4	0.0	0.0	0.1	0.6	0.3	1.9	0.0	0.0	2.1	0.9	0.9
IUD, coil, loop	0.2	0.2	1.4	2.5	0.3	1.9	1.9	1.0	1.4	2.4	4.0	4.6	2.9	2.5
Operation-female sterilization, tubes tied	0.9	0.0	0.7	0.0	0.0	0.6	0.3	0.9	0.0	0.7	0.0	0.0	0.0	0.1
Operation-male sterilization, vasectomy	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.8	1.2	0.2	0.0	0.0	0.7	0.1
Natural family planning, safe period or cervical mucus test	1.5	1.7	1.4	2.8	1.7	3.3	1.2	0.2	1.4	1.8	1.5	0.6	1.6	2.6
Rhythm or safe period by calendar	1.3	7.0	2.0	6.3	5.5	4.2	5.3	3.7	6.8	3.8	3.8	9.7	9.4	5.3
Withdrawal	4.1	4.2	4.8	6.0	8.7	4.7	5.4	4.6	7.7	1.7	5.4	10.6	7.1	2.7
Abstinence/intercourse more than one month apart	7.6	5.9	2.9	3.4	6.1	3.5	6.4	4.2	6.5	1.4	2.9	0.6	2.2	6.8
Other	0.9	1.0	1.5	1.8	0.0	0.0	1.3	0.0	0.0	0.0	0.9	0.0	0.0	0.4
Sterile	0.9	0.0	1.4	0.0	0.0	0.6	0.3	0.9	1.2	1.0	0.0	0.0	0.7	0.2
Currently pregnant	0.2	0.0	0.4	0.0	2.9	0.0	0.7	4.4	0.0	2.3	1.7	2.1	0.1	2.0
Not using a method	27.0	19.5	23.4	33.3	25.4	23.5	21.7	18.4	18.5	13.2	14.2	12.8	13.0	10.6

Table 48 Current Sexual Activity and Contraceptive Usage of Never Married Respondents by Respondents' Mother's Education

	Male			Female		
Mother's education	Less than high school	12 years	College	Less than high school	12 years	College
Not sexually active	26.5	31.9	39.5	38.5	48.1	52.4
Sexually active	73.5	68.1	60.5	61.5	51.9	47.6
Not using a method	18.4	16.6	12.9	9.7	7.3	3.7
Currently pregnant	1.8	0.4	0.5	4.1	1.2	0.3
Using effective method	42.0	41.8	39.9	41.2	39.6	36.6
Using ineffective method	11.4	9.1	7.2	6.4	3.7	7.0
Sexually Active	100.0	100.0	100.0	100.0	100.0	100.0
Pill	32.7	33.2	35.4	54.8	58.4	51.3
Condom, rubber	27.1	28.5	30.4	5.5	7.3	9.0
Foam	1.6	2.1	2.6	0.7	0.9	3.4
Jelly or cream alone	1.1	0.4	1.0	1.6	0.6	0.8
Suppository or insert	1.1	0.9	1.2	0.5	0.6	1.1
Diaphragm with or without jelly or cream	1.1	3.4	6.8	2.6	8.7	16.2
Douching after intercourse	1.1	0.3	0.3	2.0	1.0	0.2
IUD, coil, loop	1.1	1.8	1.2	3.7	2.0	3.8
Operation-female sterilization, tubes tied	0.7	0.4	0.5	1.8	0.8	0.0
Operation-male sterilization, vasectomy	0.4	0.1	0.2	0.2	0.6	0.2
Natural family planning, safe period or cervical mucus test	3.4	1.5	2.5	1.1	1.7	1.1
Rhythm or safe period by calendar	2.9	5.0	4.3	3.6	5.8	5.5
Withdrawal	5.0	5.0	6.3	3.9	3.5	4.4
Abstinence/intercourse more than one month apart	3.4	5.3	4.1	2.1	3.1	6.1
Other	1.5	1.2	0.5	0.3	0.2	0.6
Sterile	1.1	0.6	0.7	2.0	1.2	0.2
Currently pregnant	2.4	0.6	0.8	6.7	2.3	0.6
Not using a method	25.0	24.4	21.3	15.8	14.1	7.8

NOTE: See Table 38.

Table 49 Contraceptive Usage and Sexual Activity by Fertility Expectations and Current Age

	17-20 years				21 and over years			
	Expect next child				Expect next child			
	1-2 years	3-4 years	5 or more years	Don't expect children	1-2 years	3-4 years	5 or more years	Don't expect children
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Not sexually active	18.3 (-)	33.6 (-)	39.6 (-)	32.6 (-)	7.3 (-)	21.4 (-)	27.3 (-)	18.5 (-)
Sexually active - no contraception	25.8 (31.6)	13.2 (18.1)	13.6 (22.5)	15.1 (22.4)	20.3 (21.9)	16.5 (21.0)	16.7 (23.0)	19.6 (24.0)
Currently pregnant	-	-	-	-	-	-	-	-
Sterilized	0.9 (1.5)	0.2 (0.3)	0.5 (0.8)	2.5 (5.5)	0.9 (1.0)	0.6 (0.8)	0.5 (0.7)	11.1 (13.6)
Effective contraception	42.5 (52.0)	41.6 (62.7)	38.4 (63.6)	37.4 (55.5)	58.6 (63.2)	52.5 (66.8)	47.4 (65.2)	39.7 (48.7)
Ineffective contraception	12.5 (15.3)	11.5 (17.3)	8.0 (11.2)	12.3 (18.2)	12.8 (13.8)	9.0 (11.5)	8.1 (11.1)	11.1 (13.6)
Sample size	385	547	1342	254	818	663	921	493
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Not sexually active	16.3	40.3	60.2	38.1	8.6	27.3	32.3	13.7
Sexually active - no contraception	24.0 (28.7)	8.9 (14.9)	5.4 (13.6)	6.2 (10.0)	18.2 (19.9)	5.9 (8.1)	4.3 (6.4)	7.6 (8.8)
Currently pregnant	-	-	-	-	-	-	-	-
Sterilized	0.2 (0.2)	0.1 (0.2)	0.3 (0.8)	2.8 (4.5)	0.5 (0.5)	0.2 (0.3)	0.1 (0.1)	22.5 (26.1)
Effective contraception	49.5 (59.1)	46.1 (77.2)	29.3 (73.6)	48.9 (79.0)	61.7 (67.5)	57.5 (79.1)	54.7 (80.8)	49.5 (57.4)
Ineffective contraception	10.0 (11.9)	4.9 (8.2)	4.7 (11.8)	4.0 (6.5)	11.1 (12.1)	9.1 (12.5)	8.5 (12.6)	6.6 (7.6)
Sample size	389	567	1082	328	869	652	624	745

NOTE: ( ) = distribution of contraceptive use among the sexually active. Sample excludes currently pretnant. "Don't expect children" category includes respondents who have already had children but do not expect any more. See Table 38 for additional notes females age 17 to 20 expecting a child during the next two years (but not currently pregnant) are much more likely to be currently sexually active, and if sexually active, less likely to be contracepting at all or contracepting effectively than those youth not expecting a child until further in the future. Somewhat disconcertingly, however, even among those youth who indicate that they do not ever expect to have a child (or an additional child), relatively large proportions are sexually active but not using contraception effectively; for sexually active males age 17-20 who are expecting no (additional) children, 41 percent either are not using contraception at all or are using a less effective method. This statistic is almost the same for the older men.

F. Child Care Arrangements in 1982*

In this section, the focus is on one of the important consequences of teenage and young adult childbearing, the ability of the young parent to carry out alternate employment or educational activities in spite of the presence of an infant or young child. In this regard, it is useful to emphasize that the family situations reported here may not typify those of a full cross-section of contemporary American mothers and fathers. The parents requiring childcare assistance in this study are on the average younger themselves, with younger children of their own. They are less likely than older parents to be able to utilize their own older children for childcare assistance; on the other hand, they may be somewhat more likely than other parents to have assistance from siblings or other members of their own parental household. Finally, there is a somewhat greater likelihood that they will need childcare assistance for educational activities, whereas a wider age range of mothers would be more likely to be employed. One implication of this is that parents in this age group may be less likely to have funds available to pay for outside childcare assistance. The somewhat lower proportion using group care centers in this sample compared with that shown in other studies may be related to this fact.[12]

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*This section was prepared by Paula Baker.

In the 1982 NLS survey, parents with at least one of their own children in the household were asked whether they were currently enrolled, employed or in the military, or in a training program. Those involved in at least one of these activities were then asked who usually takes care of their youngest child. Parents with more than one child in the home were asked this same question regarding the care of their next youngest child. Respondents were allowed multiple responses as to the type of care they used.

As may be seen in Table 50, more than half of all parents responded that they use some form of childcare. Care by a member of the respondent's immediate family (both in and outside of the respondent's home) accounts for the majority of childcare arrangements made by both fathers and mothers. Much smaller proportions used non-relatives and only modest proportions made use of more formal day care centers. This pattern is generally consistent with totals reported in the U.S. Census study mentioned above.

The distribution of nonusers and the arrangements made by parents who use childcare are broken down by sex of parent in Table 50. While it appears that a substantially greater proportion of fathers use childcare, the reader should note that more than 70 percent of the male respondents indicated that they

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[12] See, for example, the statistics presented in Tables A and A6 of Trends in Child Care Arrangements of Working Mothers by Marjorie Lveck, Ann C. Orr and Martin B. O'Connell, U.S. Bureau of the Census, Current Population Reports, P-23, No. 117, June 1982. Table A6 highlights the greater ability of higher income families to use group care options.

Table 50 Type of Childcare Used for Youngest and Next Youngest Child[a]

Type of child care	Males Youngest	Males Next youngest[b]	Females Youngest	Females Next youngest[b]
% of parents not using child care	15.7	17.1	56.0	61.1
% of parents using child care	100.0[c]	100.0[c]	100.0[c]	100.0[c]
In home by other parent	71.2	77.5	24.0	29.8
In home by sibling	0.5	0.0	1.0	0.5
In home by other relative	4.3	2.9	18.2	16.5
In home by non-relative	1.1	1.9	4.9	6.0
In relative's home	10.5	10.3	23.0	21.7
In non-relative's home	6.8	2.9	19.9	16.4
Public child care center	1.4	1.0	4.5	3.9
Private child care center	3.1	2.9	8.4	5.8
Child cares for self	0.0	0.7	0.1	0.8
R cares for child at work	0.0	0.0	2.0	3.2
R works only while child in school	0.2	0.0	1.1	2.3
Other/NA	0.8	0.0	0.7	0.2
Number of parents	718	243	1,964	726

[a] Universe consists of respondents with own children in household.
[b] Universe also restricted to respondents with more than one child.
[c] Percentage distribution may add to over 100 percent since respondents were allowed multiple responses.

rely on the child's mother as the principal provider of care. About 15 percent of the fathers responded that their children are cared for in their own home by a relative or in the relative's home. Very small percents of fathers made use of siblings or nonrelatives in their own homes. However, nearly seven percent of the fathers said they leave their children in a nonrelative's home and about five percent indicated they used a private or public day care center. Of some importance, only a minute proportion of fathers handle childcare by adjusting their work, school, or training schedule. No fathers indicated that they care for their children at work or that their children are left on their own.

More than half of the mothers interviewed said they do not use childcare. Of those mothers using childcare, somewhat surprisingly, about a fourth indicated that the child's father provides the care. Given the youthful age of the sample, this may reflect the possibility that many of the fathers are still enrolled in school and thus have more flexibility in their schedules than might be possible if they have fulltime jobs. Nearly the same proportion said they have their children cared for in a relative's home, while less than a fifth rely on relatives in the respondent's own home. Only about 10 percent of responding mothers use either a private or public center and two percent care for their children while working.

Patterns of childcare by parents who use childcare are broken down by sex and marital status of parent in Table 51. It may be noted in this table that the proportion of mothers and fathers with no spouse present who share childcare responsibilities with the child's other parent is quite substantial. About 60 percent of the relatively small proportion of the unmarried fathers responded that they turn to the child's mother when they need care for their children. It is important to emphasize that a large

Table 51 Type of Childcare Used for Youngest and Next Youngest Child by Respondent's Sex and Marital Status[a]

	Males						Females					
	Total marital status		Married, spouse present		Other marital status		Total marital status		Married, spouse present		Total marital status	
Type of childcare	Youngest	Next youngest[b]	Youngest	Next youngest[b]	Youngest	Next youngest[b]	Youngest	Next youngest[b]	Youngest	Next youngest[b]	Youngest	Next youngest[b]
% of parents not using childcare	15.7	17.1	14.8	17.3	23.6	13.0	56.0	61.1	55.8	58.9	56.3	65.8
% of parents using childcare	100.0[c]	100.0[c]	100.0[c]	100.0[c]	100.0[c]	100.0[c]	100.0[c]	100.0[c]	100.0[c]	100.0[c]	100.0[c]	100.0[c]
In home by other parent	71.2	77.5	72.4	78.3	59.2	60.0	24.0	29.8	31.7	37.6	10.7	10.3
In home by sibling	0.5	0.0	0.5	0.0	0.0	0.0	1.0	0.5	0.7	0.0	1.4	1.7
In home by other relative	4.3	2.9	3.8	2.8	10.8	5.0	18.2	16.5	14.7	16.3	24.1	17.1
In home by non-relative	1.1	1.9	1.2	1.8	0.8	5.0	4.9	6.0	3.1	5.4	8.0	7.4
In relative's home	10.5	10.3	11.0	10.1	5.0	15.0	23.0	21.7	22.8	17.7	23.2	32.6
In non-relative's home	6.8	2.9	6.0	3.0	15.8	0.0	19.9	16.4	20.4	13.8	19.2	22.9
Public child care center	1.4	1.0	1.4	0.8	1.7	5.0	4.5	3.9	3.6	4.1	6.2	3.4
Private child care center	3.1	2.9	3.3	3.0	2.5	0.0	8.4	5.8	7.1	5.9	10.6	5.7
Child cares for self	0.0	0.7	0.0	0.8	0.0	0.0	0.1	0.8	0.2	0.5	0.0	1.7
R cares for child at work	0.0	0.0	0.0	0.0	0.0	0.0	2.0	3.2	2.6	4.5	0.8	0.0
R works only while child in school	0.2	0.0	0.2	0.0	0.0	0.0	1.1	2.3	0.9	1.4	1.4	4.6
Other/NA	0.1	0.0	0.1	0.0	0.0	0.0	0.7	0.2	0.6	0.0	1.0	0.6
Number of parents	718	243	629	223	89	20	1,964	726	1,085	428	879	298

[a] Universe consists of respondents with own children in household.
[b] Universe also restricted to respondents with more than one child.
[c] Percentage distribution may add to over 100 percent since respondents were allowed multiple responses.

proportion of these fathers are black and are indeed living with the mother of the child. In this instance, household living arrangements will be a more meaningful category for interpreting the pattern than marital status. More than 10 percent of the mothers who are not married rely on the child's father for the care of their youngest children. In this instance, the women are generally not living with the father of the child.

The results of a closer look at the determinants of childcare use by working parents are presented in Table 52. The multivariate analyses presented here focus on the care of the youngest child. A dichotomous dependent variable representing use or nonuse of childcare was regressed on a series of variables representing the respondent's background, degree of need for childcare, resources, and residential location. A series of dummy variables for race and parental education were used as background controls. Respondents' aspirations and attitudes about traditionality were represented by a series of dummy variables for educational expectations and a continuous measure of opinions about family roles. A high score on the nontraditionality scale denotes positive attitudes about working wives, while a low score indicates a more traditional orientation regarding family roles and the employment of wives. (The glossary following Section V has a more complete definition.) Information about household composition, including whether a parent of the respondent or a teenager lives in the home, was used as an indication of the level of resources available to the respondent in the event childcare was needed. The quality of the respondent's job was assessed by hourly wage and occupational Duncan socioeconomic index score, both continuous variables. Whether the respondent lives in an urban area was used as a proxy for availability of care. Greater population density tends to be associated with the probability of having access to a day care center. Since a number of

Table 52 Determinants of Childcare Use for Youngest Child for Working Parents with Own Child in Household: Ordinary Least Square Results (Unstandardized Regression Coefficients)

	Mothers			Fathers
	Married Spouse Present	Not married		Married Spouse Present, Spouse Works
		Total	Black	
Black	.067[a]	.003	--	.150
Hispanic	-.010	.062	--	.141
Poor white 1978	.044	.020	--	-.086
Father is high school grad	.009	-.034	-.020	-.274[c]
Father attended college	.032	-.141[a]	-.053	-.226[a]
Mother is high school grad	.062[b]	.054	.128[a]	.105
Mother attended college	.072[a]	.080	.174	.246
Nontraditionality score (1982)	.003	.009	.017	.049[c]
R expects to attend college (1982)	-.060	-.062	.074	-.344[b]
R expects to complete high school (1982)	-.086[a]	-.035	.053	-.125
Spouse works	.066[a]	--	--	--
Child is infant (under 3)	.038	.021	.015	.179
Child is toddler (3 to 5)	.021	-.036	-.015	.244
Teenager (14 through 17) lives in home	-.040	-.015	-.093	-.136
Parent lives in home	.054	-.009	.117	-.148
Log hourly rate of pay	-.024	.052	.050	.026
Duncan SEI score	.001[a]	.001	-.001	.003
R lives in urban area	-.018	-.029	-.016	-.159
R lives in South	-.004	-.020	.051	.133
R lives in Northeast	.065[a]	-.166[b]	-.046	.146

Table 52 Continued

	Mothers			Fathers
	Married Spouse Present	Not married Total	Black	Married Spouse Present, Spouse Works
R lives in West	.041	-.013	.032	.224[b]
Constant	.823	.754	.415	-.306
R^2	.11	.13	.12	.23
Sample size	362	256	128	153

NOTE: See Glossary following Section V for complete specification of variables.

a = significant at .10 level
b = significant at .05 level
c = significant at .01 level

federally sponsored and nonfamily childcare programs have been concentrated in the southern and western regions of the United States, dummy variables representing region of residence were also entered into the equations.

Turning first to employed, married mothers whose spouse is present, mother's education appears to have positive effects on the respondent's propensity to use childcare. Black mothers in this group are slightly more likely to use care, relative to middle income whites. When one considers mothers who have not married, two factors appear to significantly reduce the probability of using care: father's college attendance and residence in the northeast. Among black mothers who are not married, completion of high school increases the likelihood that the respondent will use some form of childcare.

The model for determinants of childcare use by fathers has been restricted to those who are employed and married with a spouse present who also works. The education of the father of the respondent seems to have an independent negative effect on use of childcare, as do the respondent's own expectations to attend college. Consistent with expectations, men with a nontraditional orientation regarding the employment of wives are slightly more likely to use childcare. Interestingly, the mean score on the nontraditionality variable is nearly the same for all married fathers regardless of the employment status of their wives. Also, the likelihood that fathers living in the western United States will use some form of childcare is about 20 percent greater than for those who reside in the north central region, holding constant all other variables.

In order to identify more precisely the factors that influence the kinds of arrangements made by parents who use childcare, the same set of factors was used to predict four childcare outcomes: care of child in the home, reliance on the immediate family, use of public or private centers, and frequency of use by someone other than a parent or sibling. The first three outcomes were treated as dichotomous dependent variables and the last was regressed as a continuous measure of number of hours per week. Means and standard deviations of key variables for users of childcare are listed in Table 53.

The results of regressing the four types of outcomes for all mothers who use childcare are presented in Table 54. The second column in each model separately indicates the effects for black mothers. Respondents whose mothers completed high school or attended college are less inclined to rely on the immediate family for care and more likely to use some form of group care. This effect remains although somewhat less pronounced in the models limited to black respondents. Also, mothers with nontraditional attitudes about family roles and working wives are slightly less likely to arrange for care in their home or with a family member than are those with a more traditional orientation. The presence of a parent in the home significantly affects all four childcare outcomes, particularly for black mothers. Mothers with a parent in the home, not surprisingly, need to rely less on outside care.

Having more than one child tends to encourage mothers to use more in-home care and reduce reliance on group care. Also, when asked about frequency of care by someone other than the child's parent or sibling, mothers with more than one child indicated they use services about four hours less per week relative to mothers with one child. This undoubtedly reflects the greater difficulty to arrange childcare if one has more than one young child in the home, and the likely greater cost associated with making those arrangements.

As one might expect, mothers of infants and toddlers require substantially more hours of care each week than do mothers of school-age children. However, the difference in the frequency of use between mothers of infants and toddlers is minimal.

Table 53 Means and Standard Deviations for Variables in Childcare Use Models

	Mothers				Fathers			
	Total		Black		Total		Employed, married spouse present and spouse works	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
In-home care	.49	.50	.45	.50	.44	.50	.32	.47
Family care	.62	.49	.71	.45	.66	.48	.61	.49
Center	.13	.34	.17	.37	.15	.35	.18	.39
Hours per week	27.7	15.7	27.2	16.1	28.2	15.4	27.4	15.0
Black	.23	.42	100.0	--	.18	.38	.12	.32
Hispanic	.08	.27	0	--	.11	.32	.10	.31
Poor white 1978	.08	.27	0	--	.08	.28	.10	.30
Father is high school grad	.34	.47	.25	.43	.23	.42	.19	.39
Father attended college	.14	.34	.08	.28	.16	.37	.21	.41
Mother is high school grad	.42	.49	.37	.48	.37	.48	.37	.49
Mother attended college	.10	.30	.08	.27	.08	.27	.11	.31
Nontraditionality score (1982)	17.9	2.94	18.4	2.69	17.1	2.80	17.8	2.60
R expects to attend college (1982)	.49	.50	.66	.47	.35	.48	.32	.47
R expects to complete high school (1982)	.42	.50	.31	.46	.46	.50	.50	.50
Child is infant (under 3)	.71	.46	.66	.48	.79	.41	.77	.42
Child is toddler (3 to 5)	.22	.42	.23	.42	.17	.38	.18	.39
R has more than one child	.33	.47	.32	.47	.23	.42	.27	.45
Teenager (14 through 17) lives in home	.10	.30	.27	.44	.06	.23	.02	.15
Parent lives in home	.18	.38	.42	.50	.09	.28	.03	.17
R is employed	.84	.37	.74	.44	.93	.25	100.0	--

Table 53 Continued

	Mothers				Fathers			
	Total		Black		Total		Employed, married spouse present and spouse works	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Log hourly rate of pay	--	--	--	--	--	--	1.88	.42
Duncan SEI score	--	--	--	--	--	--	28.1	19.6
R lives in urban area	.79	.41	.87	.34	.77	.42	.71	.46
R lives in South	.42	.49	.62	.49	.38	.49	.39	.49
R lives in Northeast	.16	.37	.16	.37	.17	.37	.18	.39
R lives in West	.17	.37	.06	.23	.24	.43	.23	.42
Sample size	835		253		123		109	

Table 54 The Determinants of Patterns of Childcare Use for Mothers Who Use Childcare: Ordinary Least Square Results (Unstandardized Regression Coefficients)

	In home care		Family care		Childcare center		Hrs/wk uses childcare	
	All	Black	All	Black	All	Black	All	Black
Black	-.109[a]	--	.092[a]	--	.018	--	-.429	--
Hispanic	-.023	--	.021	--	-.004	--	-1.04	--
Poor white 1978	-.012	--	-.015	--	-.015	--	-1.45	--
Father is high school grad	-.0004	.068	-.075	.042	.015	.009	-.201	.340
Father attended college	-.029	-.157	-.043	.085	.105[b]	-.139	-.035	6.14
Mother is high school grad	-.0009	-.236[c]	-.066	-.212[b]	.066[b]	.134[a]	-.879	2.16
Mother attended college	-.037	-.152	-.146[b]	-.096	.096[b]	.189	-.793	3.77
Nontraditionality score (1982)	-.013[a]	.006	-.020[c]	-.001	.008[a]	-.003	.292	.145
R expects to attend college (1982)	.019	-.005	.080	-.062	-.056	.018	5.74[a]	10.0
R expects to complete high school (1982)	.047	-.044	.111	-.032	-.091	-.039	2.12	8.91
Child is infant (under 3)	-.024	-.066	.090	-.090	-.078	.332	16.2[c]	4.26
Child is toddler (3 to 5)	-.106	-.127	-.004	-.164	.057	.165	15.0[c]	4.68
R has more than one child	.125[c]	.047	.053	.146[a]	.059[b]	.019	-4.13[b]	-6.59
Teenager (14 through 17) lives in home	.011	-.010	.036	-.086	-.096	.093	-5.74[b]	-6.77
Parent lives in home	.232[c]	.413[c]	.075	.206[b]	-.045	.024	2.59	1.54
R is employed	-.064	-.123	.010	-.026	.029	.038	6.68[c]	1.54
R lives in urban area	-.056	-.141	-.025	-.144	.058[a]	.099	-3.83[a]	-5.18
R lives in South	-.200[c]	-.235[b]	-.161[c]	-.143	.166[c]	.137	1.55	-1.36
R lives in Northeast	.001	-.109	.025	-.042	.057	.162	-.544	.487

Table 54 Continued

	In home care		Family care		Childcare center		Hrs/wk uses childcare	
	All	Black	All	Black	All	Black	All	Black
R lives in West	-.209^c	-.080	-.158^c	-.260	.089	.125	-.302	.734
Constant	.912	.743	.960	1.08	-.106	-.164	2.73	15.6
R^2	.10	.27	.09	.14	.13	.10	.12	.12
Sample size	732	253	732	253	732	253	500	177

NOTE: See Glossary following Section V for complete specification of variables.

a = significant at .10 level
b = significant at .05 level
c = significant at .01 level

Consistent with our earlier supposition, mothers living in the West or the South tend to use less in-home and family care than women in the north central area of the United States. While living in the south appears to increase use of group care when all mothers who use childcare are pooled, this effect is not significant for blacks.

Use of in-home care, family care, group care, and frequency of use were also regressed on the same set of variables for working married fathers whose spouse is also employed. The results in Table 55 are based on equations in which wives have once again been excluded as providers of care. This result should be interpreted with care as the sample sizes for respondents in this category are quite small. The selection of this group of fathers was determined by the fact that more than 90 percent of the fathers in the sample who use childcare are employed and more than three fourths of them are married. Fathers with expectations of attending college are significantly less likely to depend on in-home or family childcare. They show a greater reliance on group care and a higher frequency of use relative to those who do not expect to high school school. This is consistent with the general pattern which has been evidenced throughout this analysis of parents with more education or higher aspirations being more likely to use group facilities. As in the outcome models for mothers, residence in the South leads to less in-home and family care and a greater probability of using a childcare center. Fathers living in the Northeast are about 30 percent more likely to use group care compared with those living in the North Central part of the country.

The above brief descriptors are certainly not intended to be definitive, but rather to suggest the extent to which there are varieties in the ability or willingness of young parents to seek a variety of childcare assistance.

Table 55 The Determinants of Patterns of Childcare Use Among Employed Working Married Fathers with Working Spouses: Ordinary Least Squares Results (Wives excluded as providers of care)
(Unstandardized Regression Coefficients)

	In home care	Family care	Childcare center	Hrs/wk uses childcare
Black	-.018	.100	-.099	-2.38
Hispanic	.098	-.063	.279	.565
Poor white 1978	-.302[a]	-.352[b]	.231[a]	-1.02
Father is high school grad	.111	.107	-.134	-11.9[b]
Father attended college	-.023	-.444[c]	.066	-8.27
Mother is high school grad	.037	.080	.040	1.41
Mother attended college	-.367	-.363[a]	.114	8.87
Nontraditionality score (1982)	.048[b]	-.010	.027	-1.42[b]
R expects to attend college (1982)	-.443[c]	-.345[b]	.309[b]	11.22[b]
R expects to complete high school (1982)	-.288[b]	-.155	.037	13.27[c]
Child is infant (under 3)	-.363[a]	-.174	.128	-6.26
Child is toddler (3 to 5)	-.499[b]	-.348[a]	.397[b]	-5.72
R has more than one child	.008	-.151	.182[a]	.219
Teenager (14 through 17) lives in home	-.189	-.239	.166	14.07
Parent lives in home	.795	.316	-.177	.137
Log hourly rate of pay	-.135	.034	.113	-10.18[b]
Duncan SEI score	.006[b]	.005[a]	-.008[c]	-.067
R lives in urban area	-.109	-.093	.003	-1.28
R lives in South	-.387[c]	-.276[a]	.429[c]	1.99
R lives in Northeast	-.125	.003	.308[b]	-7.61

Table 55 Continued

	In home care	Family care	Childcare center	Hrs/wk uses childcare
R lives in West	$-.536^c$	-.175	.237	-4.96
Constant	.560	1.317	-.918	74.28
R^2	.50	.55	.48	.47
Sample size	99	100	100	94

NOTE: See Glossary following Section V for complete specification of variables.

a = significant at .10 level
b = significant at .05 level
c = significant at .01 level

They may also suggest areas where additional research, using the vast array of information available in this data set, may clarify, from a program or policy perspective, important childcare issues.

Finally, Table 56 suggests the extent to which the education, training and employment options of these young parents may be constrained by the lack of availability of adequate or appropriate childcare assistance. It may be ssen that only small proportions of fathers feel constrained, undoubtedly frequently reflecting the knowledge or feeling, realistic or otherwise, that the child's mother can watch the child.

In contrast, substantial proportions of young mothers indicate that they would either expand their current activities or seek to broaden the variety of their activities if satisfactory childcare were available at a reasonable rate. Indeed, 25 percent of employed mothers indicated they would have worked more hours if appropriate care were available and even more importantly, about 40 percent of non-working mothers indicated they would seek employment if they could find childcare assistance which would meet their needs. Comparable percents of young mothers indicate they would alter their behavior regarding schooling or training if appropriate childcare assistance were available.

V. THE PATTERNING OF TEENAGE SEXUAL BEHAVIORS AND ATTITUDES: SOME PRELIMINARY MULTIVARIATE RESULTS*

In this final analytical section, multivariate (ordinary least square) techniques are used to synthesize and elaborate on the variety of relationships suggested by the tabular material on fertility.[13] The results

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*Special thanks to William Marsiglio for his extensive assistance in the preparation of this section.

[13] This section draws heavily on the results and analysis presented in Mott (1983).

Table 56 Percent of Respondents Who Would Begin or Expand Activity if Satisfactory Child Care Available at a Reasonable Rate

	Males	Sample size	Females	Sample size
Percent who would[1]:				
Go to school more hours	11.3	51	19.0	141
Spend more hours in training	1.4	29	20.0	50
Work more hours	13.8	559	25.3	696
Percent who would[2]:				
Go to school	12.6	644	39.6	1764
Take training	13.2	611	39.5	1734
Go to work	10.6	34	40.8	905

[1] Limited to respondents already involved in specific activity.

[2] Limited to respondents not currently involved in specific activity.

presented here should be considered as preliminary and subject to revision, as they do not use the revised fertility variables that were adjusted following the earlier described data discrepancy analysis. It is unlikely, however, that the revisions will alter these results in any major way.[14]

In this section, we first focus in some detail on models examining the determinants of sexual activity and contraceptive use for younger (age 17 to 20) and older (age 21 to 25) men and women. Then, from what may be termed a life cycle perspective, we consider whether or not the patterning of the measurable determinants of a full range of female teenage sexual-related behaviors and attitudes fall into any coherent framework. That is, are we witnessing essentially random or disconnected behavior patterns or are there threads of continuity in the determinants of what are seemingly all fertility-related events--ranging from current sexual activity and contraceptive use (among young women age 17 to 20) to having an early (before age 17) pregnancy or birth, whether or not the early pregnancy or birth was (in a retrospective report) wanted, and whether or not the early pregnancy was aborted.

The analytical strengths of this data set rest on the knowledge that basic information on the sexuality of American youth has been collected for a large representative national sample and that to some extent the temporal ordering of relevant events and attitudes can be specified in such a way that causal inference may be possible. (See Mindick and Oskamp (1979) for a detailed discussion of these issues.) From a causal perspective, results presented here are far from definitive, but it is hoped that the tentative causal implications suggested will encourage other researchers to follow up more comprehensively on some of the issues raised.

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[14] While ordinary least square regressions are not necessarily the statistically most appropriate technique for presenting all of the materials in this section or those in the preceeding childcare section (particularly the models with particularly skewed dependent variables), for ease of presentation across models they are used here. Also, the identical models using logit techniques have already been run for a limited number of the models presented here and the patterns of statistical significance were essentially similar for the OLS and logit models.

A. The Multivariate Sample

Among the never married 17 to 20 year-olds in the sample, over 60 percent of the men and slightly under half of the women reported that they have been sexually active in the past month (see Table 57), with the majority of the sexually active of both sexes indicating that they generally use contraception. The young women apparently contracept more effectively than the young men. These results are generally consistent with results from other surveys.[15] Shifting to the overall sample of women, (see Table 58) regardless of marital status, only small percentages can be seen to have reported a birth or pregnancy before their 17th birthday and, also consistent with other studies, the majority of mothers report after the fact that the birth was not wanted at the time (Thornburg (1979); Lincoln, R., Jaffe, E.S. and Ambrose, A. (1976); Zelnik and Kantner (1980)) The above patterns were of course described in greater detail in Section IV.

From an analytical perspective, it is useful for the reader to bear in mind that changes in the determinants of sexual activity between the younger and older respondents may reflect to some extent the differential tendency of those who marry early to be different kinds of people than those who marry later--in terms of education, religion and other characteristics that will be

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[15] Because of differences in the nature of the samples, question wordings and timing of interviews, it is not possible to find other sources which are exactly comparable to our sample. However, our statistics on sexual activity and contraception do appear to be of the same order of magnitude as those cited, for example, in Zelnik and Kantner (1980) and Zelnik, Kantner and Ford (1981).

Table 57 Means for Selected Characteristics for Never Married Men and Women by Age in 1982

Characteristic	Male		Female	
	17-20	21 and over	17-20	21 and over
Percent with fathers who have attended college	30.3	32.2	29.8	33.6
Percent with mothers who have attended college	21.5	25.5	22.5	27.4
Percent Catholic in 1979	30.3	30.6	32.1	30.5
Percent Fundamental Protestant in 1979	26.7	24.3	27.8	26.9
Percent with no religion in 1979	10.7	14.5	8.3	10.3
Church attendance score (from 1 to 6) in 1979	3.36	2.76	3.70	3.17
Self esteem score in 1980	32.07	33.48	31.83	33.11
Non-traditionality score in 1979	10.28	10.69	11.75	12.02
Percent expecting to attend college as of 1979	42.4	45.7	51.3	54.8
Percent expecting to attend graduate school as of 1979	11.6	18.7	10.9	16.7
Percent living with two parents at age 14	81.7	84.6	80.8	84.0
Drug use score in 1980	1.728	2.733	1.543	2.166
Alcohol use score in 1982	1.490	1.812	0.744	0.939
Percent black	14.4	15.5	15.8	19.1
Percent Hispanic	6.1	4.6	5.8	4.5
Percent sexually active in past month	62.9	73.5	46.2	64.8
Percent (of sexually active) using contraception	75.6	84.7	80.3	87.1
Contraceptive effectively (for sexually active)	1.364	1.375	1.511	1.632
Percent contracepting effectively (of sexually active)[1]	60.2	60.8	70.4	76.3

NOTE: See Glossary at end of this section for complete definition of variables

[1] Effective contraception includes the following methods: pill, condom, diaphragm, IUD, female sterilization, and male sterilization. Ineffective contraception refers to natural family planning (or safe period by temperature or cervical mucus test), rhythm (or safe period by calendar), withdrawal, abstinence (or intercourse more than one month apart), foam, jelly or cream alone, suppository/insert, douching after intercourse, and any other unlisted method. In instances where the respondent was using both effective and ineffective contraception, the respondent was coded as using effective contraception.

Table 58 Means for Selected Characteristics in 1982 for all Men and Women by Age in 1982

Characteristic	Male		Female	
	17-20	21 and over	17-20	21 and over
Percent with fathers who have attended college	29.3	28.3	26.3	26.2
Percent with mothers who have attended college	20.7	21.9	19.7	20.8
Percent Catholic in 1979	30.0	29.7	29.6	29.4
Percent Fundamental Protestant in 1979	27.4	26.9	30.5	30.3
Percent with no religion in 1979	10.8	14.3	8.5	10.7
Church attendance score (from 1 to 6) in 1979	3.34	2.79	3.63	3.10
Self esteem score in 1980 (low to high register)	32.07	33.44	31.75	32.96
Non-traditionality score in 1979	10.27	10.57	11.67	11.70
Percent expecting to attend college as of 1979	41.0	42.6	48.1	48.2
Percent expecting to attend graduate school as of 1979	11.2	16.4	9.4	11.7
Percent living with parents at age 14	81.6	84.8	81.0	84.1
Drug use score in 1980	1.75	2.60	1.65	1.94
Alcohol use score in 1982	1.48	1.65	0.69	0.72
Percent black	13.9	13.2	14.1	13.9
Percent Hispanic	6.4	4.7	6.1	5.3
Percent with first birth before age 17			3.6	4.8
Percent with first birth conception before age 17			6.4	8.1
Percent with pregnancy occurring before age 17			9.1	9.6
Percent wanting pregnancy for birth began before age 17				33.5[a]
Percent wanting pregnancy for birth ending before age 17				30.2[a]
Percent wanting pregnancy occurring before age 17				29.4[a]

[a] Ages 17 to 25

NOTE: See Glossary at the end of this section for complete definition of variables.

reader should compare the characteristics in Tables 57 and 58. As will be suggested by the multivariate results that follow, a number of contrasting results between the determinants of sexual activity for younger and older youth may reflect this sample selection process.

B. The Determinants of Current Sexual Activity for Young Men and Women

Table 59 uses (OLS) multivariate regression techniques to examine the determinants of current (within the past 30 days) sexual activity for younger (17 to 20) and older (21 to 25) never married men and women.[16] These results are useful for comparing the determinants of relatively earlier and later sexual activity. To some extent, a comparison of sexual activity for never-married young men and women in these two age categories may be considered a comparison of sexual activity that is, if you will, more or less normatively acceptable according to the prevailing views of the society. Parallel models are presented in Table 59; one ("reduced") is limited to early background factors and the second ("full") includes a number of attitudes and behaviors that intervene between the early background factors and the outcome. That is they are at least partly a reflection of the background factors, but also, for the most part, are temporally antecedent (as measured in this longitudinal data set) to the sexual activity outcome.

The background variables are factors that have been generally considered by researchers possibly to be related to sexual mores and include variables reflecting the respondent's race and ethnicity, geographic residence, religious attachment, parent's education and parental home stability. (See

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[16] The forthcoming 1983 and 1984 surveys will include more extensive information on this topic including age at first intercourse and frequency of current sexual activities.

Table 59 Determinants of Sexual Activity During the Past Month by Age and Sex for Never-Married Respondents in 1982: Ordinary Least Square Results
(Unstandardized Regression Coefficients)

	Male				Female			
	17-20		21 and over		17-20		21 and over	
	Full	Reduced	Full	Reduced	Full	Reduced	Full	Reduced
Urban residence at age 14	.049^b	.042^a	-.084^c	-.084^c	.003	.002	.060^a	.067^b
Southern residence at age 14	.019	.018	-.005	-.002	-.043^a	-.037	-.038	-.041
Catholic 1979	.050^a	.054^b	.063^b	.070^b	.035	.039	.044	.052
Fundamental protestant 1979	.018	.029	.051	.055	.009	.021	-.002	-.001
No religious affiliation 1979	.021	.040	-.022	-.018	.064	.050	.018	.021
Church attendance 1979	.038^c	-.043^c	-.051^c	-.055^c	-.024^c	-.029^c	-.080^c	-.082^c
Hispanic	.062	.082^a	.068	.081	-.140^c	-.108^b	-.052	-.042
Black	.172^c	.223^c	.101^c	.156^c	.089^b	.152^c	.254^c	.290^c
Poor white 1978	.040	.067	.004	.005	.012	.059	.066	.064
Father completed 12 years school	-.024	-.045^a	.004	-.003	-.042	-.059^b	.006	.001
Father attended college	.023	-.026	-.038	-.056^a	-.052	-.102^c	.027	.021
Mother completed 12 years school	.013	-.010	.022	.015	-.018	-.040	-.006	-.009
Mother attended college	-.011	-.065^a	.003	-.017	-.033	-.086^b	-.051	-.055

Table 59 Continued

	Male				Female			
	17-20		21 and over		17-20		21 and over	
	Full	Reduced	Full	Reduced	Full	Reduced	Full	Reduced
Lived with two parents at age 14	.006	.011	.012	.004	-.091^c	-.107^c	-.045	-.047
Age 1982	.043^c	.033^c	.008	.007	.093^c	.085^c	.005	.004
Nontraditionality score 1979	.004	--	.014^b	--	.024^c	--	.010	--
Self esteem score 1980	-.003	--	.002	--	-.006^b	--	.005	--
Expect to attend college 1979	-.044^a	--	-.010	--	-.059^b	--	.022	--
Expect to attend school beyond college 1979	-.104^c	--	-.040	--	-.122^c	--	-.030	--
AFQT score	-.003^c	--	-.002^c	--	-.004^c	--	-.002	--
Constant	.133	.084	.691	--	-.832	.860	.557	.754
R^2 (adjusted)	.085^c	.068^c	.068^c	.060^c	.123^c	.092^c	.136^c	.134^c
F	11.04	11.44	6.80	7.80	14.33	13.85	10.75	13.76
N	2164	2164	1592	1592	1908	1908	1237	1237

a = Significant at .10 level.
b = Significant at .05 level.
c = Significant at .01 level.

See Glossary for complete specification of variables.

Dependent variable was coded (0) for not currently sexually active and (1) for currently sexually active.

for example, Chilman (1980) and Strahle (1983).) The full model includes in addition to these background factors other variables more directly related to an adolescent's current behavior and expectations. Specifically, two variables measuring the respondent's educational intentions as of 1979 are included. Presumably, women and men who intend to complete higher education independent of all other factors should follow a more "rational" fertility limiting life style (Goldsmith et al., (1972); Miller and Simon, (1974); Lindemann, (1974); Furstenberg (1975)). Women (and perhaps men) with less traditional views regarding appropriate roles for women (as of 1979) might be more sexually active but more careful about conceiving or having a child (see Fox, (1977); Cvetkovich et al., (1978)). There also is some evidence in the literature that sexual activity may be associated with self esteem, although the findings are inconsistent (see Jessor and Jessor, (1977), particularly chapter 5, for a discussion of this issue as well as Chilman (1980)).[17]

Highlighting briefly the results of Table 59, several results of some importance are suggested. First, for both younger and older men and women, the religious factor seems to be of some importance, even in 1982. Never-married respondents who report more extensive church attendance in 1979 are indeed less likely to report sexual activity three years later even after controlling for all the other factors in the model. However, particularly for the younger 17 to 20 year-olds, there is no strong evidence that attachment (or lack of attachment) to a particular religious denomination matters much; religiosity is important but the specific religion is far less important.

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[17] Parallel models, not presented here, included as additional explanatory variables whether or not the respondent had recently extensively used drugs or alcohol. The reason for including these variables was to consider whether or not there are adolescent life styles, including a range of what might be termed "non-normative" behaviors. Is there a syndrome of deviancy, if you will, which encompasses dimensions of sexuality, drug use, and alcohol use among older adolescents (Jessor and Jessor, (1977); Ch. 4). One alternative interpretation might be that there are subcategories of youth more willing to follow more adventuresome, exploratory, risk-taking lifestyles encompassing drug and alcohol use and an above average level of sexual activity. In this regard, it should be acknowledged that an overt association of this kind may also be at least partly a reflection of a greater willingness by some youths to admit to involvement in all of these activities. Because of the causal complexity inherent in these possible associations, these particular variables are not directly considered in this analysis. It is, however, useful to mention that these parallel models suggest powerful associations between drug use and early sexual activity, independent of all the other variables in the model.

From the racial and ethnic perspective, even after controlling for the various socioeconomic factors in the model, black male and female respondents at all ages have above average levels of sexual activity. Young Hispanic males are also slightly above average in this regard, whereas their female counterparts are significantly below average. Finally, white youth from economically disadvantaged (as measured by family poverty status in 1978) backgrounds are no more likely to be sexually active than the reference group of non-disadvantaged whites.

In general, the parental education factor is of some importance as an indirect determinant of teenage (17 to 20) sexual activity for both young men and women. With only the background factors in the model, young men and women with mothers who have attended college are less likely to be sexually active. Father's education is also relevant in this regard, but more so for the young women. This parental education effect dissipates to a considerable degree when the intervening and temporally more proximate adolescent behavior and attitude items are added to the model.

For young never-married women, a number of more temporally proximate factors, including having a traditional orientation regarding family and employment roles for women, expecting higher education, higher measured intelligence, and higher self-esteem, are significant predictors of less sexual activity at an early age. With the exception of the nontraditionality and self esteem measures, all of these factors are also significant predictors for younger men.

The high education expectation-higher AFQT score profile for less sexually active young women and men is certainly consistent with the notion that less sexual activity is one mechanism for assuring an ability to accomplish one's educational intentions. A nontraditional orientation for women is also, not surprisingly, associated with above average sexual activity; whether women with this philosophical orientation towards a life style compensate through the use of other fertility control mechanisms will be to some extent clarified below.

The significant inverse association between self esteem and sexual activity for women under the age of 20 is of some importance. In contrast, never-married women above the age of 20 who are sexually active have marginally above average self esteem scores. While the causes for this dramatic reversal in association cannot be fully unpackaged with this data set, further analyses considering temporally the associations among self esteem, educational and career orientations and related factors should provide some clarification. In any event, it is apparent that to the extent psychological factors affect sexual behavior, the associations are in all likelihood clouded by life cycle or maturational stage as well as (age-conditioned) sexual norms. In this case, regarding the association among self esteem, sexual activity, and age for the never-married women, it may well be that young women with low self esteem marry earlier and thus are more likely to be removed from the never-married pool by age 21. This is all confounded by the likelihood that the greater normative acceptability of sexual activity at the older ages may well cause sexual behavior to affect self esteem differently at the older than the younger ages.

While disguised in this presentation, it is also important to indicate that for younger women, low self esteem (as measured in 1980) as a predictor of sexual activity loses its significance when measures of drug and alcohol use are added to the model. (See the earlier discussion in footnote 17.) This finding suggests some important areas for subsequent research with this and other data sets. A syndrome of low self esteem being associated with drug and alcohol use and early sexual activity is one interpretation suggested by the alternate multivariate data not presented here but available from the author.

C. The Determinants of Contraceptive Use and the Effectiveness of Contraceptive Use for Young Men and Women

Even a casual examination of the determinants of current contraceptive use and effective contraception in Tables 60 and 61 suggests that there are very few meaningful predictors of this dimension of sexual behavior, at least among the variables available for use in this data set. For the young women, having a "non-religious" and a nontraditional orientation appear to be the only factors associated with an above average use of contraception. In the model for young men limited to the background factors, there does appear to be a complex of religious factors (church attendance, Catholicism) associated with less contraceptive use. Having a mother who attended college also was a significant predictor. All of these factors, however, vanish in importance when the more proximate variables are added to the model; however, in the full model, not a single variable attains significance as a predictor of contraceptive usage for teenage boys.

For the older respondents, urban residence, a number of parental education variables and higher self esteem are associated with above average contraception probabilities for women. Apparently, family influences are of

Table 60 Determinants of Contraceptive Use/Non Use by Age and Sex for Sexually Active, Never-Married Respondents in 1982: Ordinary Least Square Results
(Unstandardized Regression Coefficients)

	Male				Female			
	17-20		21 and over		17-20		21 and over	
	Full	Reduced	Full	Reduced	Full	Reduced	Full	Reduced
Urban residence at age 14	-.040	-.035	.029	.034	-.012	-.007	.056[a]	.058[a]
Southern residence at age 14	-.015	-.009	.009	.007	.017	.014	.042	.047
Catholic 1979	-.069	-.070[b]	-.051	-.049	.016	.022	.034	.036
Fundamental protestant 1979	-.044	-.044	.010	.008	.012	.012	.095[b]	.094[b]
No religious affiliation 1979	-.077	-.081[b]	.007	.005	.088[a]	.098[a]	.030	.020
Church attendance 1979	-.015	-.014[a]	-.010	-.009	.005	.005	-.012	-.011
Hispanic	-.066	-.058	-.068	-.065	-.048	-.060	-.004	-.022
Black	.016	.015	-.073[a]	-.067[a]	.039	.024	-.060	-.083[b]
Poor white 1978	-.056	-.063	-.015	-.013	.005	-.022	.039	.025
Father completed 12 years school	-.003	-.003	.032	.035	-.043	-.035	.064[b]	.071[b]
Father attended college	.057	.066[a]	.055	.072[a]	-.025	$-.661 \times 10^{-3}$	.071[a]	.098[c]
Mother completed 12 years school	-.016	-.017	.004	.015	.001	.022	.018	.038
Mother attended college	-.014	-.005	.058	-.034	.030	.071	.080[b]	.111[c]

Table 60 Continued

	Male				Female			
	17-20		21 and over		17-20		21 and over	
	Full	Reduced	Full	Reduced	Full	Reduced	Full	Reduced
Lived with two parents at age 14	.027	.028	.003	.009	.052	.049	.031	.043
Age 1982	$-.241\times10^{-3}$	$.945\times10^{-3}$	$.590\times10^{-3}$	.003	.031[b]	.037[c]	.003	.005
Nontraditionality score 1979	-.009	--	$.621\times10^{-3}$	--	.013[b]	--	-.010	--
Self esteem score 1980	.003	--	.002	--	.004	--	.006[a]	--
Expect to attend college 1979	.022	--	.058[a]	--	.034	--	.043	--
Expect to attend school beyond college 1979	.087	--	.043	--	.066	--	.018	--
AFQT score 1981	$.149\times10^{-3}$	--	$.780\times10^{-4}$	--	$-.811\times10^{-3}$	--	.001	--
Constant	.843	.830	.630	.667	-.183	.019	.447	.575
R^2 (adjusted)	.009[b]	.008[b]	.003	.003	.021[c]	.010[a]	.069[c]	.059[c]
F	1.62	1.69	1.15	1.20	1.92	1.60	3.96	4.31
N	1364	1364	1169	1169	882	882	796	796

[a] = Significant at .10 level.
[b] = Significant at .05 level.
[c] = Significant at .01 level.

See Glossary for complete specification of variables.

Dependent variable was coded (0) if not using any contraceptive method and (1) if using a contraceptive method.

Table 61 Determinants of Effective Contraceptive Use by Age and Sex for Sexually Active, Never-Married Respondents in 1982: Ordinary Least Square Results (Unstandardized Regression Coefficients)

	Male				Female			
	17-20		21 and over		17-20		21 and over	
	Full	Reduced	Full	Reduced	Full	Reduced	Full	Reduced
Urban residence at age 14	-.068	-.062	.077	.085	-.027	-.019	.115[a]	.120[a]
Southern residence at age 14	.013	.017	.055	.040	.076	.068	.098	.106[a]
Catholic 1979	-.125[b]	-.135[b]	-.108	-.105	.010	.023	.042	.042
Fundamental protestant 1979	-.044	-.051	.056	.043	.034	.036	.180[b]	.170[b]
No religious affiliation 1979	-.117	-.137[a]	-.009	-.013	.182[a]	.210[b]	.004	-.020
Church attendance 1979	-.026[a]	-.023	-.027	-.025	-.002	$.332\times10^{-5}$	-.027	-.024
Hispanic	-.155	-.156	-.159	-.172	-.143	-.183	.074	.042
Black	.027	-.003	-.152	-.171[b]	.065	.015	-.098	-.143[a]
Poor white 1978	-.094	-.122	-.018	-.009	.004	-.062	.094	.072
Father completed 12 years school	-.006	.008	.081	.097	-.109	-.087	.176[c]	.196[c]
Father attended college	.093	.125[a]	.118	.168[b]	-.088	-.031	.190[b]	.248[c]
Mother completed 12 years school	$-.836\times10^{-3}$	.006	-.021	.016	.014	.062	.071	.114[a]

Table 61 Continued

	Male				Female			
	17-20		21 and over		17-20		21 and over	
	Full	Reduced	Full	Reduced	Full	Reduced	Full	Reduced
Mother attended college	-.011	.029	-.110	-.045	-.004	.089	.100	.170^b
Lived with two parents at age 14	.041	.040	-.028	-.002	.116^a	.113^a	.025	.049
Age 1982	-.011	$-.101 \times 10^{-3}$	.017	.024	.070^c	.085^c	-.005	-.001
Nontraditionality score 1979	-.016	--	.005	--	.024^a	--	-.011	--
Self esteem score 1980	.013^a	--	.010	--	.010	--	.106	--
Expect to attend college 1979	.003	--	-.089	--	.054	--	.074	--
Expect to attend school beyond college 1979	.171^a	--	.035	--	.107	--	.059	--
AFQT score	.002	--	.002	--	.003	--	.003	--
Constant	1.341	--	.472	.804	-.686	-.201	.995	1.30
R^2 (adjusted)	.014^c	--	.015^b	.010^b	.029^c	.015	.058^c	.051^c
F	1.99	--	1.87	1.80	2.33	1.90	3.45	3.83
N	1364	1364	1169	1169	882	882	796	796

^{a} = Significant at .10 level.
^{b} = Significant at .05 level.
^{c} = Significant at .01 level.

See Glossary for complete specification of variables.

Dependent variable was coded (0) if not using method or pregnant, (1) if using ineffective method, e.g., douching, rhythm or withdrawal (2) if using effective method, e.g., condom, pill, sterilization, I.U.D., or diaphragm.

somewhat greater importance as predictors for youth passed adolescence. Perhaps these factors are replacing others which are more difficult to measure in a survey of this type--such as a variety of peer influences that may well be idiosyncratic to the particular circumstances of a youth and thus not be systematically associated with the kinds of demographic and socioeconomic factors best measured in this survey.

The models in Table 61 measuring the determinants of contraceptive effectiveness are almost equally as unsatisfactory, as shown by their predictive power. For young women, two of the three factors which predict contraceptive effectiveness are identical to those predicting contraceptive use, undoubtedly reflecting the overlap in the definition of the dependent variables.[18] A similar statement may be made for the four variables predicting contraceptive effectiveness for the older women.

Only for young men is there some substantial evidence of meaningful independent predictors of effective contraception. Young men from less religious homes who had expected (in 1979) to attend college and who had high self esteem are more likely to contracept effectively. It may well be that these background and personality characteristics represent a home family environment conducive to a more open discussion of family planning issues. That this pattern does not appear for teenage women may reflect the fact that sexual activity is considered more acceptable for teenage males than females, thus permitting more open or frank discussions in the home. Why this pattern is totally non-existent for the older men is not clear. In any event, the over-riding conclusion to be drawn from the models presented in this section is that explanations of teenage and young adult contracepting behavior are not easily found using large scale demographic/socioeconomic surveys.

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[18] "Currently contracepting" is coded 1 if contracepting and 0 if not contracepting. Effectively contracepting is coded 2 if "yes", 1 if ineffectively contracepting, and 0 if sexually active but not currently contracepting.

D. The Patterning of Adolescent Girls' Sexual Behavior and Attitudes

In this final analytical section, the focus is on the determinants of a full range of adolescent sex-related behaviors to consider whether or not there is any rational patterning of how youth think and behave in the sexual sphere. That is, are there any specific background or more proximate characteristics of young women that predict behavior in a consistent way. For example, can we find evidence of any factors that in a sense are consistently pro- or anti-natalist in their consequences?

Table 62 presents in a summary fashion the extent to which the early parental background factors are significant predictors of a full range of sex-related activities for young women, and Table 63 presents the same results for the models which include the full range of earlier and later background factors. (The full models, including coefficients, may be found at the end of this section.) The significant predictors of sexual activity and contraceptive usage (for never-married women) and early (before age 17) pregnancy and birth are synthesized in this table as are the predictors of early pregnancy and birth "wantedness" and abortion for the sample of 17 to 20 year olds.[19] Even a casual examination of this teenage sexual activity profile suggests results of some importance. Focusing first on Table 62, which is limited to the early background factors, the importance of the

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[19] It is acknowledged that the models specifying early birth and pregnancy outcome that include the proximate intervening factors have some causal difficulties. For a small part of the 17 to 20 year old group, the early birth event either occurred or could have occurred temporally at a point in time following the specification for the 1979 or 1980 explanatory attitudinal variables. Thus, an attitudinal response in these instances might represent a rationalization after the fact rather than a cause for the fertility behavior.

Table 62 Patterning of the Determinants of Sexual Behavior and Early Fertility Events and Their Wantedness for 17 to 20 Year-Old Women in 1982: Background Variables Only

	Women 17 to 20 years of age in 1982								
	Sexually active	Contra-cepting	Contra-cepting effec-tively	Pregnant before 17	First birth before 17	First birth conceived before 17	First pre-17 pregnancy was aborted	Wanted early first preg-nancy	Wanted early birth conceived before 17
Urban residence at age 14									
Southern residence at age 14							-a		
Catholic 1979						-b			
Fundamental protestant 1979									
No religious affili-ation 1979		a	b						
Church attendance 1979	-c			-c				-a	-c
Hispanic	-b						-a		
Black	c			c	c	c	-b		-a
Poor white 1978				b		b	-a		
Father completed 12 years school	-b			-b		-b			
Father attended college	-c						c		

Table 62 Continued

	Women 17 to 20 years of age in 1982								
	Sexually active	Contra-cepting	Contra-cepting effec-tively	Pregnant before 17	First birth before 17	First birth conceived before 17	First pre-17 pregnancy was aborted	Wanted early first preg-nancy	Wanted early birth conceived before 17
Mother completed 12 years school				-c	-b	-c		-b	-b
Mother attended college	-b			-c	-c	-c	c		
Lived with two parents at age 14	-c		a	-c	-c	-c			
Age 1982	c	c	c						

NOTE: The following notation refers to statistical significance of unstandardized O.L.S. coefficient in model including all listed explanatory variables whose outcome noted at top of column is the dependent variable. See Glossary for complete specification of all variables. Sample for sexually active model includes all never married women. Sample for contracepting models are sexually active never married women. Sample for pre-age 17 pregnancy and birth models are all women. Samples for other models are self explanatory.

a = Significant at .10 level.
b = Significant at .05 level.
c = Significant at .01 level.

Table 63 Patterning of the Determinants of Sexual Behavior and Early Fertility Events and Their Wantedness for 17 to 20 Year-Old Women in 1982: All Variables

	Women 17 to 20 years of age in 1982								
	Sexually active	Contra-cepting	Contra-cepting effec-tively	Pregnant before 17	First birth before 17	First birth conceived before 17	First pre-17 pregnancy was aborted	Wanted early first preg-nancy	Wanted early birth conceived before 17
Urban residence at age 14									
Southern residence at age 14	-a			-a					
Catholic 1979									
Fundamental protestant 1979									
No religious affiliation 1979		a	a						
Church attendance 1979	-c				-c				-a-c
Hispanic	-c								
Black	b			c	c	c		-b	-b
Poor white 1978									
Father completed 12 years school									
Father attended college							b		

Table 63 Continued

	Women 17 to 20 years of age in 1982								
	Sexually active	Contra- cepting	Contra- cepting effec- tively	Pregnant before 17	First birth before 17	First birth conceived before 17	First pre-17 pregnancy was aborted	Wanted early first preg- nancy	Wanted early birth conceived before 17
Mother completed 12 years school				-b		-b		-a	-b
Mother attended college				-c	-b	-c	b		
Lived with two parents at age 14	-c		a	-c	-c	-c			
Age 1982	c	b	c						
Women's nontraditionality 1979	c	b	a		-b				b
Self esteem 1980	-b			-a				a	
Expect to attend college 1979	-b			-c	-c	-c			
Expect post-graduate training 1979	-c			-b	-c	-b	b		
AFQT score 1981	-c			-c		-c	b	-c	-b

NOTE: See Table 59 for technical note.

[a] = Significant at .10 level.
[b] = Significant at .05 level.
[c] = Significant at .01 level.

religion and education factors is apparent. Church attendance not only is associated with lower levels of reported sexual activity but, in addition, with lower levels of reported early pregnancy (but not with different levels of contraception or abortion!). In other words, there is surface evidence that religiosity may translate into reduced early fertility through abstinence, but not through differential contraceptive behavior. Church attendance is also associated with verbally reporting after the fact that the early pregancy or birth was not wanted.

Similarly, having a mother or father who had more education is associated with less sexual activity and significantly less early fertility behavior. In the parental education case, however, in contrast with the religion factor, abortion may also be seen to be an associated mechanism for controlling fertility.

In contrast with the above two factors, stability of family background appears to have an effect on reducing fertility through the dual mechanisms of abstinence and contraception. That is, living with two parents during adolescence is associated with significantly below average sexual activity, above average contraceptive use and less early childbearing.

From a policy perspective, perhaps the most disconcerting finding of this study pertains to black young women. After controlling for all the other factors, black young women are more sexually active, more likely to become pregnant, less likely to have an abortion, and significantly less likely, after the fact, to have wanted their early birth. Given the fact that all of these factors (with the exception of wantedness) operate in a pro-natalist direction, it is somewhat disconcerting to see no evidence of a positive association between this race variable and contraception.

Economically disadvantaged white youth show some, but not all, of these pronatalist tendencies; they have above average probabilities of an early pregnancy or birth, below average reported abortion probabilities, but are not unlike other white youth (the residual race category left out as the reference group) in their pattern of sexual activity. It is suggested that the importance of cultural factors *per se* can perhaps be summarized most succinctly by the three race/ethnicity variables in the sexual activity model; all three groups--the blacks, Hispanics and poor whites are essentially economically disadvantaged but the first is above average, the second below average and the third average in its level of sexual activity.

Table 63 includes the identical range of outcome variables but also includes the more proximate adolescent explanatory variables. The importance of childhood *and* early adolescent socialization processes should be evident; educational expectations for college or post-graduate training (as of 1979) are important predictors of less sexual activity and lower early fertility. Also, expecting post-graduate education as of 1979 is predictive of an above average probability of having an abortion, if one did become pregnant. To some extent, the parental education variables in the full model have become reduced in importance, suggesting the significance of the youth's own educational expectations as intervening factors between parental education and later fertility-related outcomes.

The youth's score on the Armed Forces Qualification Test (taken by over 95 percent of the respondents in the survey), whether interpreted as an intelligence measure, a proxy for general awareness, or as a meaningful indicator of an ability to make more rational decisions, certainly provides strong and consistent anti-natalist results. Young women with higher scores on the test were less sexually active, less likely to have an early pregnancy or birth, more likely to have an abortion and, finally, less likely to want the pregnancy if it did occur. Thus, in many ways, its effects parallel those of both the youth's own educational expectations as well as the parental education factor. While a post hoc statement regarding non-wantedness of a birth obviously can no longer prevent that birth, it may be predictive of a reduced probability of repeating the same birth or pregnancy process. Subsequent analyses with this data set will clarify the issue.

Young women with less traditional life style (regarding family and employment) orientations in 1979 also show rationally consistent fertility behavior. As indicated earlier, nontraditionality is associated with a greater level of sexual activity. However, it is also associated with an above average tendency to use contraception and lower early fertility. Also, as noted earlier, there is marginal evidence that young women with greater self esteem are less sexually active, less likely to have an early birth, but, in this case, more likely to have wanted the pregnancy if they had it.

What all the findings above suggest is that even large scale surveys such as the NLS, while not perfect vehicles for dealing with social-psychologically based outcomes, are nonetheless extremely useful for providing insights into individual level behaviors. While no one model in this schema tells a comprehensive story, the patterning of the overall results suggests strongly the importance of socialization and social-psychological considerations as fertility behavior determinants. In the context of our contemporary society, early motivation regarding careers, role orientation in general and even determinants of inner security appear to be important determinants of sexual behavior. The temporal dimensions of the NLS data set can be used to at least partially clarify a number of these issues in a more comprehensive manner than was attempted in this evaluation document.

Table 5: Background Determinants of Early (Before 17) Fertility Events and their Wantedness by Age for All Women: Ordinary Least Square Results

(Unstandardized Regression Coefficients)

Reduced Models	Early pregnancy		Early abortion		First birth conceived before 17		First birth occurring before 17		Want early first pregnancy before 17		Want early birth conceived before 17		Want early birth occurring before 17	
	17-20	21+	17-20	21+	17-20	21+	17-20	21+	17-20	21+	17-20	21+	17-20	21+
Urban residence at age 14	-.016	.013	.080	.072	-.018	.007	-.008	-.002	.007	-.041	-.013	-.032	.005	-.022
Southern residence at age 14	-.020	.013	$-.118^{a}$	.039	-.005	.020	-.001	$.020^{b}$	.013	.054	-.029	.035	-.063	.097
Catholic 1979	-.004	$.593\times10^{-3}$	.084	-.081	$-.012^{b}$	.007	-.005	.011	-.006	$.244^{b}$	.015	.165	.005	.237
Fundamental protestant 1979	.005	$.033^{b}$	-.063	$-.110^{b}$	.005	$.031^{a}$	-.004	$.038^{c}$	.043	$.182^{a}$	.044	$.181^{a}$	.085	$.157^{a}$
No religious affiliation 1979	.026	.019	-.135	-.059	.021	.001	.020	.008	.101	$.210^{a}$	.007	$.219^{a}$	.010	$.209^{a}$
Church attendance 1979	$-.012^{c}$	$-.020^{c}$	-.018	$-.023^{a}$	-.006	$-.018^{c}$	-.004	$-.015^{c}$	$-.037^{a}$	.023	$-.073^{c}$	.015	-.044	-.006
Hispanic	.017	$.069^{c}$	$-.194^{a}$	-.070	.023	$.050^{a}$	.006	$.035^{a}$	.186	-.057	.159	.042	.272	.225
Black	$.078^{c}$	$.125^{c}$	$-.146^{b}$	-.056	$.075^{c}$	$.123^{c}$	$.050^{c}$	$.078^{c}$	-.100	$-.246^{c}$	$.166^{a}$	$-.266^{c}$	-.095	$-.092^{c}$
Poor white 1978	$.064^{b}$	$.064^{c}$	$-.182^{a}$	-.004	$.052^{b}$	$.054^{c}$	.029	.014	.076	-.025	.013	.027	.052	.113
Father completed 12 years school	$-.028^{b}$	-.015	-.007	-.007	$-.030^{b}$	-.009	-.013	$.222\times10^{-3}$	.047	.086	.075	.077	-.011	$.234^{b}$
Father attended college	-.010	$-.034^{b}$	$.232^{c}$	.019	-.018	-.024	-.009	-.010	.015	-.137	.155	-.119	-.014	-.114
Mother completed 12 years school	$-.053^{c}$	$-.074^{c}$	-.050	.066	$-.041^{c}$	$-.082^{c}$	$-.023^{b}$	$-.045^{c}$	$-.156^{b}$	-.027	$-.211^{b}$	.012	$-.216^{a}$	.012

Table 64 Continued

Reduced Models	Early pregnancy		Early abortion		First birth conceived before 17		First birth occurring before 17		Want early first pregnancy before 17		Want early birth conceived before 17		Want early birth occurring before 17	
	17-20	21+	17-20	21+	17-20	21+	17-20	21+	17-20	21+	17-20	21+	17-20	21+
Mother attended college	$-.100^{c}$	$-.080^{c}$	$.446^{c}$	.023	$-.083^{c}$	$-.089^{c}$	$-.047^{c}$	$-.044^{c}$	-.234	-.074	-.206	-.004	-.392	.068
Lived with two parents at age 14	$-.047^{c}$	$-.032^{c}$	.032	.029	$-.047^{c}$	$-.039^{b}$	$-.032^{c}$	$-.034^{c}$	-.052	-.040	-.049	-.029	-.070	.031
Age 1982	$.809 \times 10^{-3}$	-.003	.003	-.009	-.002	-.002	.001	.002	-.015	.003	-.015	.008	.039	-.002
Constant	.213	.251	.230	.316	.215	.234	.079	.088	.680	.182	.929	.111	-.220	.147
R^2 (adjusted)	$.053^{c}$	$.096^{c}$	$.222^{c}$	.034	$.059^{c}$	$.099^{c}$	$.033^{c}$	$.076^{c}$	.014	.028	.055	.027	-.04	.003
F	9.62	18.52	4.53	1.49	10.66	19.13	6.23	13.51	1.20	1.43	1.57	1.38	.790	1.03
N	2312	2471	186	213	2312	2471	2312	2471	201	227	147	210	82	125

^{a} = Significant at .10 level.
^{b} = Significant at .05 level.
^{c} = Significant at .01 level.

See Glossary for complete specification of variables.

Table 65 Determinants of Early (Before 17) Fertility Events and Their Wantedness for 17-20 Year Old Women: Ordinary Least Squares Results
(Unstandardized Regression Coefficients)

Full Models	Early pregnancy	Early abortion	Live birth conceived before 17	Live birth occurring before 17	Want early first pregnancy	Want live birth conceived before 17	Want live birth occurring before 17
Urban residence at age 14	-.017	.083	-.019	-.008	.006	-.039	-.030
Southern residence at age 14	$-.025^{a}$	-.107	-.009	-.003	.022	-.016	-.030
Catholic 1979	$-.473 \times 10^{-3}$	.089	-.009	-.003	.008	.056	-.013
Fundamental protestant 1979	-.005	-.066	-.004	-.009	.011	.032	.033
No religious affiliation 1979	.032	-.133	.027	.023	.084	.022	-.022
Church attendance 1979	$-.010^{c}$	-.024	-.005	-.002	$-.035^{a}$	$-.068^{c}$	-.033
Hispanic	.005	-.145	.012	.004	.119	.120	.214
Black	$.065^{c}$	-.081	$.062^{c}$	$.048^{c}$	$-.192^{b}$	$-.233^{b}$	-.192
Poor white 1978	.039	-.137	.032	.018	.050	.005	.067
Father completed 12 years school	-.017	-.004	-.020	-.007	.029	.064	-.037
Father attended college	.021	$.193^{b}$	.008	.007	.056	.205	-.031
Mother completed 12 years school	$-.035^{b}$	-.103	$-.026^{b}$	-.013	$-.123^{a}$	$-.200^{b}$	-.196
Mother attended college	-.062c	$.332^{b}$	$-.053^{c}$	$-.027^{b}$	.153	-.200	-.449

Table 65 Continued

Full Models	Early pregnancy	Early abortion	Live birth conceived before 17	Live birth occurring before 17	Want early first pregnancy	Want live birth conceived before 17	Want live birth occurring before 17
Lived with two parents at age 14	-.042^c	.032	-.044^c	-.031^c	-.028	-.020	-.012
Age 1982	.006	-.153	.002	.003	-.022	-.031	.022
Nontraditionality score 1979	-.001	.009	-.003	-.004^b	.019	.035^b	.029
Self esteem score 1980	-.003^a	-.403x10^3	-.001	.340x10^{-3}	.016^a	.016	.027^b
Expect to attend college 1979	-.070^c	.002	-.052^c	-.043^c	-.026	-.067	-.057
Expect to attend school beyond college 1979	-.058^b	.305^b	-.045^b	-.044^c	-.007	.061	-.082
AFQT score 1981	-.001^c	.004^b	-.001^c	-.336x10^{-3}	-.007^c	-.006^b	-.006
Constant	.311	-.036	.297	.124	.473	.662	-.705
R^2 (adjusted)	.076^c	.259^c	.079^c	.049^c	.044	.088^b	-.021
F	10.54	4.24	10.90	7.01	1.46	1.71	.917
N	2312	186	2312	2312	201	147	82

^{a} = Significant at .10 level.
^{b} = Significant at .05 level.
^{c} = Significant at .01 level.

See Glossary for complete specification of variables.

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GLOSSARY

AGE

Current age as of 1982 interview.

AFQT PERCENTILE SCORE

Over 95% of the NLS youth cohort were administered the Armed Forces Qualification Test (AFQT) during the 1981 summer. This test determines eligibility for enlistment in the armed forces. It consists of the sum of the number of correct scores for the following sections of ASVAB: arithmetic reasoning + word knowledge + paragraph comprehension + 1/2 (numerical operations). The test has a theoretical range of 0-105.5 and for the purposes of this study raw scores were converted into percentile values by rounding and dividing by 105.

ALCOHOL USE 1982

Respondents were asked "How often have you had 6 or more drinks on one occasion during the last 30 days?" and categorized (0) never (1) once (2) 2 or 3 times (3) 4 or 5 times (4) 6 or 7 times (5) 8 or 9 times (6) 10 or more times.

CATHOLIC 1979

DUMMY-Takes a value of 1 if present religion as of 1979 interview was Roman Catholic, 0 otherwise.

CHURCH ATTENDENCE 1979

Religious service attendence during last year (1) not at all (2) several times a year or less (3) about once a month (4) two or three times a month (5) about once a week (6) more than once a week.

COLLEGE EXPECTATIONS AS OF 1979

DUMMY-Respondents were asked, "what is the highest grade or year you think you will actually complete?" Takes a value of 1 if respondent expected between 13-16 years, 0 otherwise.

CONTRACEPTIVE USE/NONUSE

DUMMY-Takes a value of 1 if respondent was using any contraceptive method, 0 otherwise. Pregnant respondents were coded 0.

CONTRACEPTIVE USE/NONUSE EFFICIENCY

Respondents coded (0) not using method or pregnant (1) using inefficient method (2) using efficient method.

DRUG USE 1980

Estimated number of times within the last year that respondent had smoked marijuana or hashish given the following categories: (0) never (1) once (2) twice (3) 3-5 times (4) 6-10 times (5) 11-50 times (6) more than 50.

EARLY ABORTION

DUMMY-Takes a value of 1 if respondent reported an aborted pregnancy conceived before 17, early pregnancies resulting in live births coded 0. Miscarriages and stillbirths were excluded from this variable creation.

EARLY PREGNANCY BEFORE 17

DUMMY-An approximate conception date in century months based on 1900 was calculated for a respondent's first pregnancy. For live births the conception date was estimated as the baby's birth date minus nine months. In those cases where a pregnancy did not result in a live birth, the number of months the pregnancy lasted was subtracted from the termination date. The conception date in century months was then subtracted from a respondent's own birth date in century months. An early pregnancy was considered to have occurred if the respondent's age at estimated conception was equal to or less than 203 months or 16 years, 11 months. Early pregnancies were coded 1, 0 otherwise.

EFFECTIVENESS OF CONTRACEPTIVE METHOD

Respondents coded (1) if sexually active but not using a contraceptive method, (2) if sexually active and using an inefficient method, e.g., douching, rhythm, or withdrawal, (3) if sexually active and using effecient contraceptive method, e.g., condom, pill, sterilization, I.U.D., or diaphragm, and (4) if not sexually active.

FATHER'S COLLEGE EDUCATION

DUMMY-Takes a value of 1 if the highest year of school the respondent's father completed was equal to or greater than 13, 0 otherwise.

FATHER'S HIGH SCHOOL EDUCATION

DUMMY-Takes a value o 1 if the highest year of school the respondent's father completed was equal to 12, 0 otherwise

FUNDAMENTALIST PROTESTANT IN 1979

The National Opinion Research Center's (1981) coding scheme was used to differentiate Fundamentalists from Non-Fundamentalists. The only exception taken to NORC's classification scheme was that all Baptists were categorized as Fundamentalists. Takes a value of 1 if respondent's 1979 religion was classified as Fundamental, 0 otherwise (see, Chi, 1982 for a more detailed discussion of the present coding scheme).

LIVE BIRTH OCCURRING BEFORE 17

DUMMY-Takes a value of 1 if respondent had a live first birth before 17, births after 17 coded 0.

LIVE BIRTH CONCEIVED BEFORE 17

DUMMY-Takes a value of 1 if a live first birth was conceived before the respondent was 17, conceptions after 17 coded 0.

LIVING WITH TWO PARENTS AT AGE 14

DUMMY-Takes value of 1 if respondent was living with two parents at age 14, at least one of whom he/she referred to as a mother or father and the other as a step-parent, 0 otherwise.

MOTHER'S COLLEGE EDUCATION

DUMMY-Takes a value of 1 if highest year respondent's mother completed was equal to or greater than 13, 0 otherwise.

MOTHER'S HIGH SCHOOL EDUCATION

DUMMY-Takes a value of 1 if highest grade respondent's mother completed was equal to 12, 0 otherwise.

NON TRADITIONALISM SCALE

Four items were scaled to provide a measure of individuals' sex-role attitudes regarding wives' employment and household responsibilities. Respondents were asked how strongly they agreed or disagreed with the following statements:

a) A woman's place is in the home, not in the office or shop.
b) A wife who carries out her full family responsibilities doesn't have time for outside employment.
c) It is much better for everyone concerned if the man is the achiever outside the home and the woman takes care of the home and family.
d) Women are much happier if they stay at home and take care of their children.

Selection of these items was based on an initial factor analysis of six employment related questions appearing on the 1979 NLS Youth Survey. A simple factor was identified by using principal factoring with iterations. The rotated varimax solution revealed that the four items subsequently scaled loaded reasonably well on this one dimension (.72, .62, .70, .62). Chronbach's reliability α was .765 for the four selected items.

Questions were scored from 1-4 and coded so that lower scores reflected more traditional attitudes and higher scores represented more modern or egalitarian types of responses. The items were then summed to create a scale having a theoretical range of 4-16. Listwise deletion was employed in calculating scale values for individual respondents. The scale had a $\overline{x}$ = 11.07 and so = 2.42.

NO RELIGION 1979

DUMMY-Takes a value of 1 if respondent had no present religion as of the 1979 interview, 0 otherwise.

POOR WHITE

DUMMY-Takes a value of 1 for white respondents meeting the Office of Management and Budget's criteria for poverty in 1978 when the sample was selected, 0 otherwise.

POST COLLEGE EXPECTATIONS AS OF 1979

DUMMY-Respondents were asked in 1979, "what is the highest grade or year you think you will actually complete?" Takes a value of 1 if the respondent expected at least 17 years, 0 otherwise.

SELF-ESTEEM SCALE

Rosenberg's (1965) ten item scale was used to measure respondent's self esteem. Respondents were asked in 1980 to indicate how much they agreed or desagreed with a series of statements which represented opinions people have about themselves. For example, "I feel that I have a number of good qualities," and "I wish I could have more respect for myself." Items were scored from 1-4 and coded so that 1 represented the lowest value of self esteem and 4 represented the highest value. A self esteem scale value was obtained for individual respondents by summing the ten items while using listwise deletion. The scale's theoretical range is 10-40 and for the present sample it had a $\overline{x}$ = 32.53 and STD = 4.08. Chronbach's reliability coefficient was α = .836 for these items. For a more thorough discussion of Rosenberg's scale see Wylie (1974 and 1979).

SEXUAL ACTIVITY

DUMMY-Takes a value of 1 if currently sexually active (within past 30 days), 0 otherwise.

SOUTHERN RESIDENCE AT AGE 14

DUMMY-Takes a value of 1 if respondent lived in southern region of United States at age 14, 0 otherwise.

URBAN RESIDENCE AT AGE 14

DUMMY-Takes a value of 1 if respondent indicated that he/she lived in a town or city at age 14, 0 otherwise.

WANT EARLY FIRST PREGNANCY

DUMMY-Two questions were used to create this variable. If respondents experienced an early pregnancy and answered "yes" to the following question, "was the reason you (were not/stopped) using any methods because you yourself wanted to become pregnant?" they were coded 1. Likewise, if they responded "yes" or "didn't matter" to the question, "just before you became pregnant the first time, did you want to become pregnant when you did?" they were code 1. Respondents were coded 0 if they answered "no" to the latter question.

WANT LIVE BIRTH OCCURRING BEFORE 17 (FIRST PREGNANCY)

DUMMY-Takes a value of 1 for respondents having a live first birth before 17 and who wanted the pregnancy, and 0 for those not wanting the early pregnancy.

WANT LIVE BIRTH CONCEIVED BEFORE 17 (FIRST PREGNANCY)

DUMMY-Takes a value of 1 for respondents conceiving a live first birth before 17 and who wanted the pregnancy, and 0 for those not wanting the early pregnancy.

LIST OF VARIABLES ON SUPPLEMENTARY FERTILITY TAPE

VBL. #	TITLE
1	Has R ever had any children? 79 Int.
2	Number of children R has had, 79 Int.
3	Month of birth of first child, 79 Int.
4	Day of birth of first child, 79 Int.
5	Year of birth of first child, 79 Int.
6	Month of birth of second child, 79 Int.
7	Day of birth of second child, 79 Int.
8	Year of birth of second child, 79 Int.
9	Month of birth of third child, 79 Int.
10	Day of birth of third child, 79 Int.
11	Year of birth of third child, 79 Int.
12	Month of birth of fourth child, 79 Int.
13	Day of birth of fourth child, 79 Int.
14	Year of birth of fourth child, 79 Int.
15	Month of birth of fifth child, 79 Int.
16	Day of birth of fifth child, 79 Int.
17	Year of birth of fifth child, 79 Int.
18	Has R had any children since last Int? 80 Int.
19	Number of children R has had since last Int. 80 Int.
20	Month of birth of first child born since last Int., 80 Int.
21	Day of birth of first child born since last Int., 80 Int.
22	Year of birth of first child born since last Int., 80 Int.
23	Has R had any children since last Int? 81 Int.
24	Number of children R has had since last Int., 81 Int.
25	Month of birth of first child born since last Int., 81 Int.
26	Day of birth of first child born since last Int., 81 Int.
27	Year of birth of first child born since last Int., 81 Int.
28	Month of birth of second child born since last Int., 81 Int.
29	Year of birth of second child born since last Int., 81 Int.
30	Has R ever had any children? 82 Int.
31	Number of children R has had. 82 Int.
32	Month of birth of first child, 82 Int.
33	Day of birth of first child, 82 Int.
34	Year of birth of first child, 82 Int.
35	Month of birth of second child, 82 Int.
36	Day of birth of second child, 82 Int.
37	Year of birth of second child, 82 Int.
38	Month of birth of third child, 82 Int.
39	Day of birth of third child, 82 Int.
40	Year of birth of third child, 82 Int.
41	Month of birth of fourth child, 82 Int.
42	Day of birth of fourth child, 82 Int.
43	Year of birth of fourth child, 82 Int.
44	Sex of first child, 82 Int.
45	Sex of second child, 82 Int.
46	Sex of third child, 82 Int.
47	Sex of fourth child, 82 Int.
48	Residence of first child, 82 Int.
49	Residence of second child, 82 Int.
50	Residence of third child, 82 Int.
51	Residence of fourth child, 82 Int.

52	Month of death of third child, 82 Int.
53	Year of death of third child, 82 Int.
54	Month R began first pregnancy as of 1982 Interview
55	Year R began first pregnancy as of 1982 Interview
56	Number of pregnancies as of 1982 Interview
57	Number of live births as of 1982 Interview
58	Number of miscarriages as of 1982 Interview
59	Number of abortions as of 1982 Interview
60	Age of R at first birth as of 1982 Interview
61	Age of R at second birth as of 1982 Interview
62	Age of R at third birth as of 1982 Interview
63	Months between R's first and second births as of 1982 Interview
64	Months between R's second and third births as of 1982 Interview
65	Month R began first marriage as of 1982 Interview
66	Year R began first marriage as of 1982 Interview
67	Month R ended first marriage as of 1982 Interview
68	Year R ended first marriage as of 1982 Interview
69	Age R began first marriage as of 1982 Interview
70	Month R began second marriage as of 1982 Interview
71	Year R began second marriage as of 1982 Interview
72	Months between R's first marriage and first birth as of 1982 Interview
73	Number of R's own children in household, 1979 Interview
74	Number of R's own children in household, 1980 Interview
75	Number of R's own children in household, 1981 Interview
76	Number of R's own children in household, 1982 Interview
77	Age of R's youngest child in household, 1979 Interview
78	Age of R's youngest child in household, 1980 Interview
79	Age of R's youngest child in household, 1981 Interview
80	Age of R's youngest child in household, 1982 Interview
81	Consistency of Fertility Report, 1979 to 1982
82	Sex of R, 79 Int.
83	R's Racial Ethnic Cohort From Screener, 79 Int.
84	Identification Code

The Center has also been active in manpower planning both in the U.S. and in the developing countries. A project for the Ohio Advisory Council for Vocational Education identified the highly fragmented institutions and agencies which supply vocational and technical training in Ohio. Subsequent projects for the Ohio Occupational Information Coordinating Committee have followed graduates of these programs. These data and information on occupational distributions of employers collected for the Occupational Employment Statistics Program are being integrated into a comprehensive planning model which will be accessible to trainees and employers and linked to a national network.

Another focus of the Center's research is industrial relations and collective bargaining. In a project for the U.S. Department of Labor, staff members are working with unions and management in a variety of industries to evaluate several current experiments for expedited grievance procedures. The procedural adequacies, safeguards for due process, and cost and timing of the new procedure are being weighed against traditional arbitration techniques.

Senior staff also serve as consultants to many boards and commissions at the national and state level. Recently the Center's staff have produced papers and prepared testimony for the Department of Labor, the Vice President's Task Force on Youth Unemployment, the Joint Economic Committee of Congress, the National Commission for Employment and Unemployment Statistics, the National Commission for Employment Policy, the White House Conference on the Family, the Ohio Department of Corrections, the Ohio Board of Regents, the Ohio Governor's Task Force on Health, and the Ohio Governor's Task Force on Welfare.

The Center maintains a working library of approximately 10,000 titles, including a wide range of reference works and current periodicals, as well as an extensive microfilm and microfiche collection. Through their facilities linked to the University computer, the Center's data processing staff provide statistical, technical, and programming support both for in-house researchers and the over 250 users of the National Longitudinal Surveys data tapes. They maintain the NLS tapes, data base, documentation, and associated software.

For information on specific Center activities, write: Director, Center for Human Resource Research, 5701 North High Street, Worthington, Ohio 43085.

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Center for Human Resource Research

The Center for Human Resource Research is a policy-oriented multidisciplinary research organization affiliated with The Ohio State University. Established in 1965, the Center is concerned with a wide range of contemporary problems related to developing and conserving human resources. Its more than thirty senior staff members come from disciplines including economics, education, English, health sciences, industrial relations, management science, psychology, public administration, social work, and sociology. This multidisciplinary team is supported by approximately 70 graduate research associates, full-time research assistants, computer programmers, and other personnel.

The Center has become preeminent in the fields of labor market research and manpower planning. With continuing support from the United States Department of Labor, the Center has been responsible since 1965 for the National Longitudinal Surveys of Labor Market Experience. Staff have assisted in population and human resource planning throughout the world, having conducted major studies in Bolivia, Ecuador, Kenya, Sierra Leone, Venezuela, and Zaire. At the request of the National Science Foundation, a review of the state of the art in human resource planning was conducted. Other studies have assessed the impact of labor and education policy on labor supply and evaluated employment statistics collection methods. Senior personnel are also engaged in several other areas of research—collective bargaining and labor relations, evaluation and monitoring of the operation of government employment and training programs, and the projection of health education and facility needs.

The Center for Human Resource Research has received over two million dollars annually from government agencies and private foundations to support its research in recent years. Providing support have been the U.S. Departments of Labor, State, Defense, Education, Health and Human Services; Ohio's Health and Education Departments and Bureau of Employment Services; the Ohio cities of Columbus and Springfield; the Ohio AFL-CIO; the George Gund Foundation; the Rockefeller Foundation; and the Ford Foundation. The breadth of the Center's research interests is best illustrated by a brief review of a few of its current projects.

The Center's largest project is the National Longitudinal Surveys of Labor Market Experience. This project has involved repeated interviews over a fifteen-year period with four groups of the United States population: older men, middle-aged women, and young men and women. The data are collected for 20,000 individuals by the U.S. Bureau of the Census, and the center is responsible for data analysis. Since 1979, the NLS has followed an additional cohort of 13,000 young men and women between the ages of 14 and 21. This cohort includes for the first time those serving in the armed forces at the time of the initial interview. In addition to being the definitive U.S. national data set on the labor market activities of young adults, this continuing survey includes unique batteries of questions on such socially important issues as delinquency, alcohol and drug use, fertility, and prenatal care. For this cohort, field work is handled by the National Opinion Research Center. To date the Center's staff have prepared dozens of research monographs, special reports, and books on the NLS, and they also prepare and distribute data tapes for public use.

The Quality of Work Life Project, another ongoing study, began in 1975 as an attempt to improve the productivity and the meaningfulness of work for public employees in the cities of Springfield and Columbus. Center staff also served as third party advisers and researchers exploring new techniques for attainment of management-worker cooperation and worker health in a number of central Ohio private sector industries.

(Continued on inside back cover)

Center for Human Resource Research

The Ohio State University

Health Status and Work Activity of Older Men: Events-History Analyses of Selected Social Policy Issues

by

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March 1985

HEALTH STATUS AND WORK ACTIVITY OF OLDER MEN: EVENTS-HISTORY ANALYSES OF SELECTED SOCIAL POLICY ISSUES

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ABSTRACT

The interrelationship between the health status and work activity of older men plays a central role in at least three current controversies about the direction of public policy. Whether the average health levels of older men have deteriorated, improved or remained roughly constant over the past 25 years and the extent to which below-average health leads to involuntary withdrawals from work are key considerations in appraising the effects of growing public transfers on the dramatic post-war decline in male labor force participation rates. Whether health levels of older men who retire from market work deteriorate as a result of the retirement is also a subject of controversy bearing on the evaluation of policies shaping early retirement trends. Whether recent improvements in mortality have selectively favored individuals at higher risk of disablement and thus contributed to pre- and post-retirement health trends is increasingly subject to debate as well.

In this paper, the interrelationship between health status and work activity in the National Longitudinal Survey (NLS) panel of Older Men is analyzed to cast further light on these controversies. A continuous-time, Markov model of health-related events encompassing death and disability states is constructed based on the longitudinal record of activity limitations and mortality experience of the NLS panel over the period 1966-1981. Several variants of the model are estimated for various subsamples of the panel, each emphasizing one of the three policy issues noted above.

The results suggest that health levels of older men have deteriorated over the past two decades, partly as a consequence of improvements in life expectancy. These health trends have contributed to the observed decline in labor force participation of this population subgroup. Little evidence is found, however, for the claim that retirement harms health status.

I. INTRODUCTION

The interrelationship between the health status and work activity of older men plays a central role in at least three current controversies about the direction or scope of public policy:

1. Whether the average health levels of older men have deteriorated, improved or remained roughly constant over the past 25 years and the extent to which below-average health leads to involuntary withdrawals from work are key considerations in appraising the effects of growing public transfers on the dramatic post-war decline in male labor force participation rates. Studies conducted over the past decade have concluded that inducements arising from social insurance and private pension plans are the primary cause of the declining labor supply of older men.[1] However, some of these studies have omitted health variables altogether from their statistical analyses and others have only used weak measures as control variables that probably bias health effects toward zero.[2] More important perhaps is that most of these studies use cross-sectional designs so inferences about the influence of poor health on involuntary withdrawals from work involve not only measured health effects at a point in time but also the extent to which average health has changed over time. Haveman and Wolfe's "replication" of Parsons' analysis disputing the magnitude of policy inducement effects on labor market withdrawal illustrates this point.[3] Haveman and Wolfe use a disability measure to control for health differences. Activity limitation or disability rates have historically risen at a rapid pace, so even marginal cross-sectional effects of disability on reduced labor supply are magnified greatly when the historical effect of health on nonparticipation is considered. In contrast, Parsons uses a mortality-related proxy to

control for health differences; mortality rates have declined over time, so health effects, even if they are substantial cross-sectionally, are minimized over time. Not surprisingly, the differences in estimated health effects between the two analyses and inferences about historical trends in labor force participation drawn from them are greatly confounded. These differences help rekindle the long standing controversy about the respective roles of health and pension factors in early retirement trends. Additional studies of the influence of health levels on work activity of older men, preferably using longitudinal data, thus appear warranted.

2. Whether health levels of older men who retire from market work deteriorate as a result of the retirement has also been the subject of considerable controversy. Some studies detect substantial retirement effects on health levels. Given the enormous increase in the number of retired persons in the recent past, the finding suggests either needed changes in policies that shape retirement patterns and/or needed interventions designed to improve adaptation to nonwork and the stress associated with anticipating this major "life event."[4] However, other studies such as a recent prospective investigation of participants in the VA Normative Aging project fail to detect adverse health consequences, and a few reports in the literature even conclude that the average health of retirees improves.[5] The recent review of this literature by Minkler[6] argues convincingly, however, that many of these studies are flawed methodologically. A critical concern is whether adequate measures for pre-retirement health status or post-retirement changes in such status are available and whether they can be interpreted unambiguously. A related concern is whether suitable controls for factors likely to moderate or

cushion the health effects of retirement are taken into account. Of special interest in this regard are recent reports by epidemiologists that social support networks influence (and hence confound) the relationship between the diminution of work activity and subsequent health status.[7] Additional analysis of the determinants of post-retirement health is thus also warranted.

3. Whether mortality and disability-morbidity trends are inversely related and, correspondingly, whether declining death rates raise the number of disabled individuals needing medical care and social services support is the subject of current debate in the health/medical literature.[8] Fries, for example, argues that in an age of fixed life spans and increasingly prevalent chronic disease, morbidity is being "compressed" and the need for many types of (acute) medical care interventions is accordingly being reduced.[9] Others dispute this claim, arguing that additional resources must be allocated to health and medical care services to satisfy the needs of a rapidly aging population.[10] This controversy may not seem highly relevant to the link between health and work unless one considers that disablement is most frequently gauged by the individual's ability to carry out major social roles and that the major role responsibility of adult men is to engage in market work.[11] If mortality improvements selectively favor those at higher risk of such disability, some portion of the observed historical decline in labor force participation rates may be attributable to improved life expectancy. Among others, Shepard and Zeckhauser (1980) theorize that the likelihood of such selectivity is high, although no estimate of its magnitude in the case of labor force participation trends has been prepared. Once selectivity factors in the relationship between mortality and disability

are admitted, new questions arise about the measured influence of other labor force determinants. For instance, do human capital characteristics such as formal schooling mediate the likelihood of disability and death differently and do the returns to such human capital investments differ when biases attributable to selective survival are included in the analysis? Additional analyses of the health and work interrelationship of men in a longitudinal framework incorporating morbidity and mortality outcomes and controlling for human capital differences are thus needed.

In this paper, the interrelationship between health status and work activity in the National Longitudinal Survey (NLS) panel of older men is analyzed to cast additional light on each of these policy controversies. A continuous-time, Markov model of health-related events encompassing death and functional disabilty or capability states is constructed based on the longitudinal record of activity (work) limitations and mortality experience of the NLS panel over the period 1966-1981. This model links the (instantaneous) probabilities of moving between (and among) these disability and death states to a set of baseline and time-varying characteristics of respondents, adjusted for censored observations attributable to uncompleted spells of functional capacity or incapacity, death or other loss to follow-up. Estimated parameters of the model are used to compute transitional probabilities between, and duration of stay in, health-related states associated with any specific set of these characteristics. Several variants of the model are estimated for various subsamples of the NLS panel, each emphasizing or isolating one of the three policy controversies noted above. One variant tests for the effects of pension eligibility, opportunity costs of time and physical-psychological impairments on subsequent history of disability in that portion of the NLS sample employed as wage and salary workers in 1966 to see the degree to which disability trends reflect deteriorating health status. The second tests for the effects of retirement status and of social (family) support mechanisms on subsequent health history of working men who had not retired prior to 1971 to see whether retirement has a deleterious effect on health. Other variants of the model test for the influence of human capital characteristics, especially schooling, on subsequent health history for the NLS panel as well as testing for the effects for different age cohorts and race subgroups of the entire panel.

The paper is organized as follows. Section II summarizes recent historical trends in various health status measures and mortality of older men. Key health indicators used later in the construction of the health-events model are emphasized in the discussion. Section III sets out the main characteristics of this model, including a description of all of the variables used in the statistical analysis. Sections IV-VI present the results of the several variants of the model testing for policy, retirement and human capital/cohort effects in turn. Section VII summarizes the empirical findings and discusses their implications for social policy.

II. HEALTH LEVELS OF OLDER MEN

Macro Trends

Figure 1 depicts trends in health-related characteristics of men 45 years of age and older over the past quarter-century in the United States. Age-specific mortality rates (from all causes) for men 45-64 years of age and 65 and older adjusted for changes in the age distribution within each category were calculated from Vital Statistics data.[12] Age-specific disability rates refer to the proportion of men in each age category reporting in the National Health Interview Survey that they are limited in major activities (or

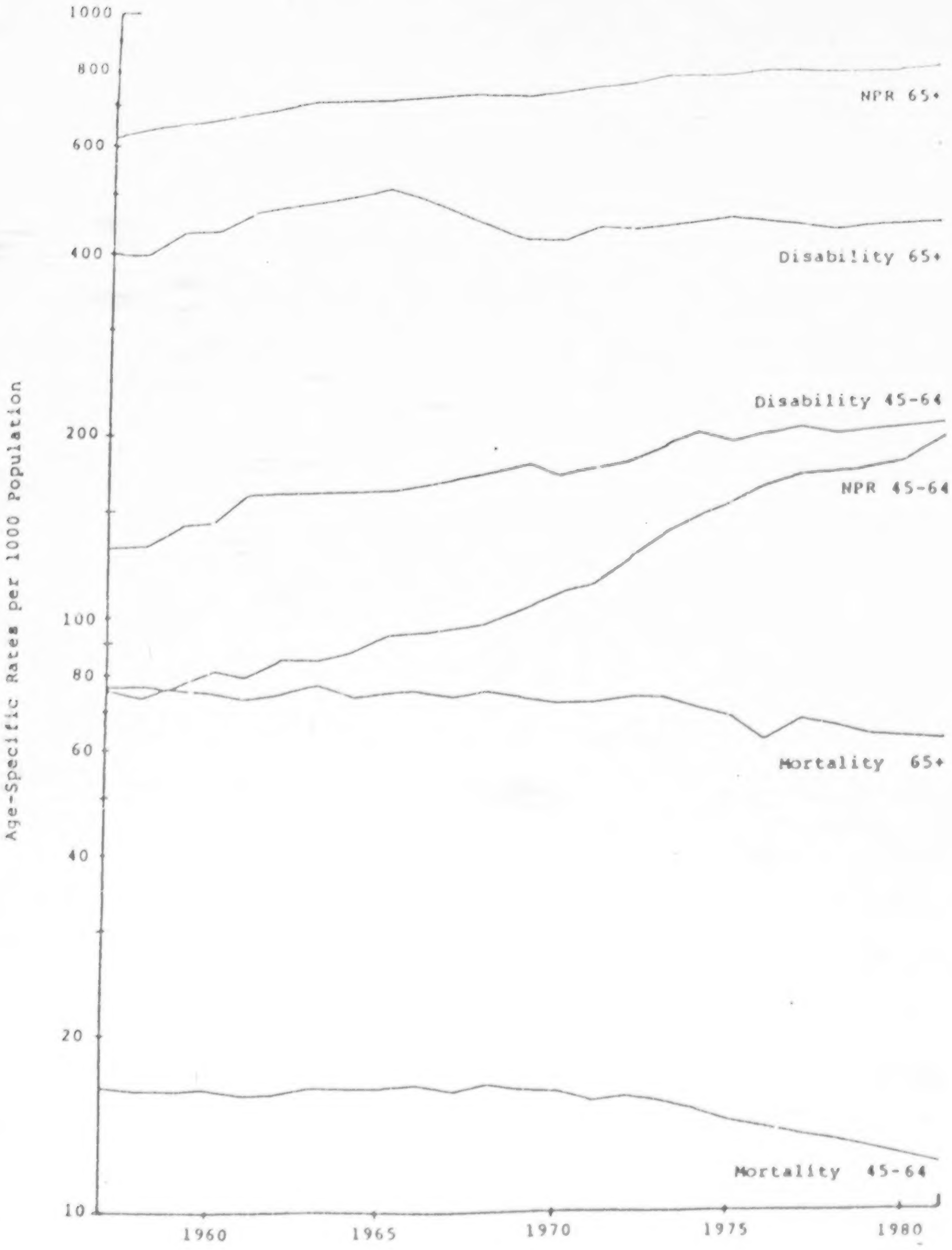

Figure 1. Age-Specific Mortality, Disability and Labor Force Nonparticipation (NPR) Rates for Men 45-64 Years of Age and 65 Years and Older, United States, 1957-1981.

SOURCE: See text.

prevented from performing major activities at all) because of a chronic health problem.[13] Age-specific participation rates refer to the percentage of men in each age category classified in the Current Population Survey as out of the labor force.[14]

As can be seen, each of these series has changed at a reasonably fast pace over the period for each age category. In the case of men over 65 years of age, mortality rates fell at almost one percent per year, from about 76 to 62 per 1000 men. Disability rates of men over 65 fluctuated during this period, but grew on average at about 0.5 percent per year, viz., from 397 to 447 per 1000. Nonparticipation in the labor force for these men also grew at one percent per annum, from 625 per 1000 in 1957 to about 815 in 1981. The changes for men 45-64 are dramatically greater. Mortality rates for this group fell at more than one percent per year from 16 to 12 per 1000 over the period; the pace was even more rapid over the decade of the seventies. In contrast, disability rates rose from about 130 to 210 per 1000 or roughly 1.9 percent per annum. Since these estimates are not adjusted for the change in the age distribution within the age category, some portion of this increase can be attributed to the growth of the oldest men in the category. Even with such adjustments, however, the overall increase in disability prevalence would doubtless continue to be high. The widely discussed change in nonparticipation of men 45-64 is reflected in the steep rise in the NPR curve, particularly during the 1970's. Overall, the nonparticipation rate for these men increased at 3.9 percent per year over the period 1957-1981.

The extent to which there are connections between and among these historical trends is of central importance in the present paper. Visual inspection of Figure 1 suggests several interesting interrelationships in this regard. In the case of men over 65, for instance, nonparticipation rates increased steadily in the face of both fluctuating disability rates and mortality rates that were first steady and then declining. The degree to which poor health contributes to work withdrawal and/or the degree to which retirement causes adverse health consequences is thus not transparent in these trends, even though activity limitation measures have been used to proxy health status as both independent and dependent variables in the health-retirement literature.[15] In this respect, the link between disability and nonparticipation for men 45-64 is also noteworthy because the rise in disability prevalence is not only steadier but predates the dramatic increase in nonparticipation by a decade. This pattern fails to support not only the literature showing significant health effects on early retirement but also the results of recent (cross-sectional) studies concluding that labor force nonparticipation and such health "declarations" are simultaneously determined.[16] More striking perhaps is the timing of the upturn in nonparticipation of men 45-64 and the more rapid decline in their age-specific mortality rates. As with the other patterns in these data, however, it is difficult to conclude that these changes are necessarily correlated.

The interrelationships among the trends portrayed in Figure 1 might be more apparent if it were possible to superimpose concurrent trends in medically-relevant health conditions and indicators of choice (preference orderings) influencing the behavioral sequelae of those conditions. To illustrate substantively, the observed decline in all-cause mortality, particularly of men 45-64 years, stems to a considerable degree from the declining number of deaths attributable to ischemic heart disease--the major killer of men in this age group. There is presently some controversy in the medical literature about the factors that have contributed to this decline, including the issue of whether the incidence of ischemic disease has also been declining.[17] Unless the entire decline in mortality is attributable to a decline in incidence, prevalence must have increased as the average duration of cases lengthened. Prevalent cases of ischemic heart disease are quite likely to suffer shortness of breath, locomotor difficulties, etc. and thus be at risk of limitations in social role activities, including withdrawal from the work force. However, there is a large medical-epidemiologic literature suggesting that socioeconomic variables mediate this risk and, correspondingly, that variations in disability behavior cannot be explained fully by differences in underlying disease.[18] For example, a recent study suggests that the opportunity cost of time is inversely related to the probability that ischemic patients will be functionally disabled.[19] Disability and mortality trends shown in Figure 1 might be more easily interpreted if these underlying trends in incidence, prevalence and risk factors were also mapped.

Unfortunately, aggregate data on specific disease conditions and factors influencing behavioral consequences of disease are either unavailable or insufficiently detailed to allow us to analyze the linkage between disability, mortality and work. Even for major cases such as heart disease, reasonably detailed estimates of incidence and duration are missing. Prevalence data available, say, through the National Interview Survey refer only to individuals who previously reported limitations in role responsibility.[20] Furthermore, detailed correlates of such health problems (including work/retirement status) are not available in this data set. More generally, sufficiently detailed aggregate information needed to further our understanding of the interrelationships among national trends depicted in Figure 1 are unavailable. They can be analyzed effectively only by drawing on relevant micro-data sets of representative samples of older Americans.

Micro Dynamics: NLS Older Men

The NLS panel data on Older Men is clearly a valuable resource for more detailed study of the interrelated trends in health and work. Because the Survey of this cohort originally encompassed approximately 5000 men who were 45-59 years of age in 1966, a substantial proportion of them have withdrawn from market work or are otherwise categorized as retired over the past 18 years. By the tenth follow-up survey conducted in 1981, for example, substantially more than two-thirds of the interviewees could be categorized as retired. Health factors leading to these withdrawals or stemming from them can thus be analyzed. The panel has been reduced in size because of losses due to death, which is of course hardly unexpected in view of the ages of the initial cohort. About 15 percent of the 3518 whites and 22 percent of the 1420 blacks interviewed in 1966 died between 1966 and 1976; between 1976 and 1981, about 12 and 17 percent of the white and black men interviewed in 1976 had died. Even though the causes of these deaths are not known, the survey year when the death is first reported is known so that duration of survivorship for individuals with given health and socioeconomic characteristics at an earlier date can be analyzed in detail. Equally important perhaps is that ten NLS follow-ups have included questions on self-reported work limitations (whether the respondent was limited by a health or physical condition in the amount or kind of work he could do and, if so, whether he was prevented from working at all). These questions are virtually identical in format to those posed in the National Health Interview Survey, except that the NLS format does not include additional questions on the "chronic" conditions that are the primary cause(s) of the limitation. Prevalent cases are nonetheless identified in exactly the same form and are thus comparable to the macro disability data presented in the preceeding subsection. It is worth noting in this regard that age-specific prevalence rates for respondents interviewed in both 1976 and 1981 were roughly identical percentages to those observed in the macro data described above.

Although chronic medical conditions are not obtained in the NLS, three follow-ups have included a detailed battery of questions on physical and mental capacities that can be interpreted generally as the residual (chronic) effects of various organ-level pathologies or departures from normal physiological and psychological functioning. These capacities include the ability to walk, use stairs, stand, sit, stoop, lift heavy and light weights, handle, reach, see, hear, and deal with people by degree of severity. They also include whether men experience signs and symptoms such as shortness of breath, pain, tiring easily, aches, fainting spells, anxiety, or weakness. It is possible to use these "impairment" measures to gauge the underlying health or disease conditions influencing disability and mortality outcomes of NLS respondents. Since we have previously examined the level and changes of these items separately and in summary index form for the period 1971-1976, we focus in the remainder of this subsection on the impairment characteristics of NLS respondents for the period 1976-1981.[21] This descriptive analysis provides considerable evidence that impairment status changes over time and that these changes influence the behavioral consequences of disease.

To begin with, prevalence rates for these impairments are fairly high for men in this age group and rise rapidly as they grow older. To simplify the exposition, a subset of the 19 NLS impairment items selected in reference to the International Classification of Impairment, Disabilities and Handicaps for their representativeness and importance in understanding the consequences of disease are discussed.[22] Table 1 presents the prevalence rates for these

Table 1. Prevalence, Restoration and Incidence of Selected Impairments, NLS Survivor's Panel by Race, 1976-1981

Impairment[a]	Prevalence 1976		Restoration[b]		Incidence[c]		Prevalence 1981	
	White (%)	Black (%)	White (%)	Black (%)	White (%)	Black (%)	White (%)	Black (%)
Ambulation	16.8	25.8	5.7	7.2	13.2	17.1	24.3	35.7
Locomotor	8.1	15.8	3.7	8.1	8.5	14.7	12.9	22.4
Body Movement	10.4	13.1	6.7	7.3	7.5	11.9	11.2	17.7
Manual Activity	7.7	11.7	4.3	7.1	6.1	10.9	9.5	15.5
Sight	9.5	16.4	5.6	8.3	8.6	13.7	12.5	21.8

[a] See text for definition.

[b] Percentage of panel reporting impairment in 1976 but not in 1981.

[c] Percentage of panel reporting impairment in 1981 but not in 1976.

selected items. The rates are calculated for 2014 white and 746 black men who were interviewed in 1976 and 1981 (labelled the survivors panel). As can be seen in the first two columns of Table 1, a substantial percentage of these men reported difficulty in performing (including the complete incapacity to perform) ambulatory, locomotor, body movement and manual activity functions, with the rates generally being a third higher for blacks than for whites. Equally high proportions of these men have sight or visual communication problems. In all cases, the prevalence rates for impairment rise with age so that each impairment item is higher in 1981 than in 1976. It is noteworthy that more than a third of the blacks and a quarter of the whites had some difficulty in ambulatory function.

The general rise in prevalence with age, however, is only the net effect of a set of highly dynamic changes in incidence and restoration of impaired function over time. To gauge these changes, two dummy variables were created by comparing responses to these items by members of the survivors panel between 1976 and 1981, viz, whether respondents reporting an impairment in 1976 also reported a similar problem in 1981 and whether respondents reporting an item in 1981 reported that condition in 1976. We refer arbitrarily to the first type of change as restoration of impaired capacity and the second type as the incidence of new impairments. The middle columns in Table 1 show that a considerable number of such changes occurred over the period. Specifically, the columns show that large percentages of initially impaired men experienced restored function, that the incidence of new impairments were greater than the differences in 1976 and 1981 prevalence rates and, by implication, that the duration of these problems average less than 5 years. Note that restoration rates as a percent of 1976 prevalence rates are quite high, and marginally higher for whites than blacks. They imply that duration of these items is on the order of 30 months. Such durations may be growing shorter because of increased access to medical care. Men also acquired new problems over the period. Judged against the proportion nonimpaired in given items in 1976, incidence rates of these functional difficulties range from about 9 percent for locomotor to 16 percent for ambulation.

The unexpectedly high rates of change in impairment observed over this five-year period suggest the possibility that the findings are artifactual. We turn briefly in Tables 2 and 3 to analyses of the relationships between restoration and incidence of selected impairments and several health/handicap outcomes available from the 1981 follow-up to appraise whether this explanation can be rejected. All outcome measures are dichotomous, measuring the ability to perform normal role functions (disabled in normal role activities by a health or physical condition), mobility (ability to go outside without help from another person), personal care (help needed in looking after such functions as dressing, bathing, eating, or other activites of daily living, ADL) and retrospective health appraisal (health improved versus other appraisals or deteriorated versus other appraisals over the past five years).[23] The dichotomous variables characterizing either the acquisition or recovery of impaired functions are cross-classified against these dichotomous outcome measures. The result is a set of 2x2 tables for each impairment item, outcome and race combination. Odds ratios are then calculated to test whether antecedent restorations in function lead to more favorable outcomes or whether incurring a new problem leads to less favorable ones. Since age can confound this relationship, we stratify the sample into three age subgroups in 1981: 60-64, 65-69 and 70-74 years. Methods developed by Mantel and Haenszel are then applied to test for possible interaction effects of age in the impairment-handicap association, with significant differences labelled age effects.[24]

Table 2 presents odds ratios that unfavorable outcomes (disabled, health worse, travel restricted or ADL help needed) are reported when a specific

Table 2. Odds Ratios[a] that Men Incurring Impairments Report Unfavorable Health-Related Outcomes by Type and Race

Impairment[b]	Disabled[b]		Health Worse[b]		Travel Restricted[b]		ADL Help[b]	
	White	Black	White	Black	White	Black	White	Black
Ambulation	8.2**#	8.8**	5.8**#	5.5**	c	7.7*	15.2**#	17.3**
Locomotor	20.5**	17.4**	4.2**	6.2**	33.3**	12.5**	7.3**#	9.8**
Body Movement	14.8**	7.4**	4.6**	4.6**	8.3*	9.1**	7.4**	6.0**
Manual Activity	7.5**	7.4**	3.3*	3.6**	4.3*	11.1**	8.1**#	7.7**
Sight	6.7**	5.7**#	3.7**	5.6**	7.3	8.3**	6.1**#	4.5*

a. Mantel - Haenszel statistics for age strata-specific odds ratios. See text.
b. See text for definition.
c. Only incident cases reported this outcome.
** = $p \leq .001$; * = $p \leq .10$; # = age effects, $p \leq .10$.

Table 3. Odds Ratios[a] that Men Restoring Impaired Functions Report Favorable Health Outcomes by Type and Race

Impairment[b]	Functional[b]		Health Better[b]		Travel Freely[b]		ADL Unassisted[b]	
	White	Black	White	Black	White	Black	White	Black
Ambulation	9.1**	9.1**	2.8*	0.3	8.4**	7.6*	4.0**	2.6*
Locomotor	c	4.3	3.1*	0.9	9.5**	11.8**	1.6	3.3**
Body Movement	c	c	2.4	1.0	5.2**	2.1	3.3**	2.4
Manual Activity	7.7**	2.9	c	0.9	5.3**	3.0	4.0**	1.4
Sight	2.4*	2.9**#	0.5	5.3	3.4	2.8	1.0	2.0

a. Mantel - Haenszel statistics for age strata - specific odds ratios. See text.
b. See text for definition.
c. Only restored cases reported this outcome.
** = $p \leq .05$; * = $p \leq .10$; # = age effects, $p \leq .10$.

impairment is incurred. As can be seen, the e ratios are in most instances significantly greater than one at conventional confidence levels, suggesting that deteriorations in physical capacity are accompanied by changes in disability status and other functional handicaps. The similarity in magnitude of these ratios between whites and blacks, especially given the race differential in prevalence, is noteworthy. That there appear to be no interaction effects of age and impairment on those outcomes is also noteworthy. Table 3 shows that restored functional capacity in men impaired at the beginning of the period has the anticipated effect on reports of more favorable outcomes. While these effects are not generally as large or statistically significant as those detected in the analyses of incidence, the results seem encouraging enough to suggest that changes in Table 1 are not artifactual and, thereby, that dynamic intertemporal changes in impairments must be accounted for in any explanation of trends in disability and work. In interpreting these results, it is worth recalling that the comparison is between the odds of reporting a more favorable overall improvement in health on handicap status when only one previously impaired function has been restored. Calculated ratios that men reporting multiple impairments will report favorable outcomes are roughly similar to those for single items.

In view of these results, 1976 prevalence rates of these selected impairments for 453 nonsurvivors over the period 1976-1981 were computed. Odds ratios of mortality given the presence of these items for all men interviewed in 1976 (survivors plus nonsurvivors) stratified as before by age to see whether age exacerbates the impairment-death relationship were also computed. Table 4 shows that the 1976 prevalence rates for nonsurvivors were considerably higher than the corresponding rates for survivors only (Table 1). Not surprisingly, the high prevalence among nonsurvivors leads to odds ratios of mortality associated with reporting an item that are highly significant. The odds of dying over the period were generally 2.5 to 3 times

Table 4. Proportion of Nonsurvivor Panel[a] Reporting Selected Impairments in 1976 and Odds Ratios of Mortality 1976 - 1981 for All Men Reporting Impairments in 1976 by Type and Race.

Impairment[b]	% Nonsurvivors Impaired in 1976		Odds Ratio of Mortality	
	White	Black	White	Black
Ambulation	44.1	47.7	3.7**	1.9**#
Locomotor	26.0	32.2	2.7**	2.1**
Body Movement	21.9	21.8	2.3**	1.4
Manual Activity	14.2	20.7	2.0**	1.3
Sight	14.3	23.6	1.9**	1.5*

a. Men interviewed in 1976 but non-interviewed in 1981 because of death.
b. See text for definition.
** = $p \leqslant .001$; * = $p \leqslant .10$; # = age effects, $p \leqslant .10$

greater for whites reporting given items in 1976 than the odds for their nonimpaired counterparts. Although they are also highly significant, the odds ratios for blacks are somewhat lower than those for whites. This difference may stem from the higher prevalence rates of blacks in 1976. The absence of age-impairment interactions is also quite interesting. With only a few exceptions, differences across age-stratified tables are always insignificant. The failure to detect such effects here reinforces the general absence of these effects in the analysis of survivors presented earlier.

Because the entire set of 19 impairment items from which the subset above was selected is much too unwieldy to include separately in the statistical analyses, we construct summary indices of impairment status by means discussed at length in several earlier papers.[25] Although index values are used in continuous form in the following section, we conclude the present subsection by comparing the distribution of respondents by categories reflecting the severity level of impairment in 1976 and 1981 to see whether the dynamic character of single impairment items is also reflected in composite indexes of all items. Table 5 presents the distribution of the survivors panel by equivalent categories of severity at the beginning and end of this five-year period. It shows again the dynamic character of (composite) impairment status, with the average level of impairment growing more severe as the panel ages. For instance , only about one fifth of each subsample was unimpaired in both years and only about another fifth was in the same impairment category in each of the two years. Changes were generally in the direction of more severe problems, but it is also clear that many respondents enjoyed improvements or recovery of function during this period. We turn in the next sections to a multivariate analysis of the degree to which these changes contribute to the disability and mortality experience of the NLS panel.

Table 5. Percentage Distribution of Survivor Panel by Impairment Category[a] in 1976 and 1981 by Race

1976 Impairment Category and Race	1981 Impairment Category					
	None	Minor	Moderate	Substantial	Severe	All
White						
None	20.9	9.6	9.6	1.6	0.7	42.4
Minor	4.1	6.1	6.6	2.0	0.8	19.5
Moderate	1.6	3.9	9.4	4.9	1.6	21.5
Substantial	0.3	0.8	3.0	3.7	1.9	9.7
Severe	0.2	0.2	1.1	2.3	3.1	6.9
All Categories	27.1	20.6	29.7	14.5	8.1	100.0
Black						
None	20.1	9.0	6.1	3.4	0.6	39.2
Minor	3.3	3.6	6.2	2.7	2.3	18.1
Moderate	2.7	2.8	7.4	4.2	3.2	20.3
Substantial	0.4	0.8	3.0	3.9	4.0	12.1
Severe	0.1	0.0	2.2	3.4	4.6	10.3
All Categories	26.6	16.2	24.9	17.6	14.7	100.0

a. See text for definition

III. DYNAMIC MODEL OF HEALTH-RELATED EVENTS

Analytic Framework and Estimation Techniques

A literature has grown up in recent years on production functions or determinants of population health levels. Some studies have analyzed the correlates of mortality rates; others have investigated factors that account for variations in morbidity or disability rates.[26] Most of these latter studies have interpreted "health" as the ability to function or discharge social role responsibilities. They have shown that such abilities are not rigidly determined by demographic, biological or even medical care factors, but rather that socioeconomic (choice) differences play an equal if not more important role in their determination. Multivariate functions with various demographic, socioeconomic and medical or health-related arguments are thus assumed to be essential for accounting for forces shaping the ability to function, including the ability to function at all (mortality). The analyses in the present paper adopt the general conceptual framework suggested by the health production literature for investigating mortality and disability experiences of the NLS panel. In contrast to this earlier literature, however, the analyses here are longitudinal rather than cross-sectional, and they include survivors as well as nonsurvivors so that disability and mortality outcomes can be linked. They also use data on impairment status to control for underlying physical and psychological factors that may affect these outcomes and thereby allow the net influence of physical and socioeconomic factors on intertemporal variations in functional ability to be ascertained.

Events-history methods are used to estimate these models.[27] Longitudinal histories of the functional status of NLS respondents are used as the primary outcome measures. These histories portray the time or duration individuals under observation spend in different functional states or, conversely, the transitional probabilities of moving from one state to another over the period. Such movements or transitions over the observational period are considered "events" in the histories of functional status. In this paper, functional capacity is defined in terms of four mutually-exclusive outcomes: functionally capable (=1); functionally incapable or disabled (=2); death (=3); and loss to follow-up or attrition (=4). The first two states are transient; individuals may move into and out of them over time. In contrast, the third and fourth states are absorbing; individuals may enter them from either of the two transient states, but once entered, they cannot leave them. Let p_{ij} (0,t), (i, j=1, 2; $i \neq j$), represent the transitional probability that an individual in transient state i at time 0 will be in state j at time t and $q_{ik}(t)$, (i=1, 2;k=3,4;$i \neq k$), the probability of death or attrition for individuals in either of the two initial health states. The statistical analysis focuses on estimating the long-term values of these probabilities and the factors that affect their magnitude as a means of understanding more about the observed trends in work, disability and death over the past quarter century.

These event probabilities are assumed to be generated by a continuous-time, Markov process. One aspect of this assumption is that the analysis focuses on "instantaneous transition" or incidence rates. These instantaneous rates are represented for the two transient states as the probability $n_{ij}h$ that an individual in state i will move to state j during the instantaneous time period (t, t + h). Mortality and attrition rates are represented as the probability $m_{ik}h$ that an individual in transient state i dies or is lost to follow-up in the interval (t, t+h). In other words,

$$n_{ij} = \lim_{h \to 0} p_{ij} (t, t+h)/h \qquad (i, j=1, 2; i \neq j) \qquad \text{(1a)}$$

and

$$m_{ik} = \lim_{h \to 0} q_{ik} (t, t+h)/h \qquad (i=1, 2; k=3,4; i \neq k) \qquad \text{(1b)}$$

The n_{ij} and m_{ik} are the basic parameters of the events-history models and, as shown in the Appendix, all other elements can be derived from them. Another aspect of the Markovian assumption is that the waiting time between transitions has an exponential distribution so that, even though the incidence rates are constant over time, the probability of a change occurring increases as the length of the time interval increases. Substantively, this assumption embodies the idea that the aging process decreases the probability of remaining functionally capable (and alive) as the individual grows older.

The unobservable incidence rates are written as exponential functions of observable exogenous variables characterizing demographic, economic and health differences across sample members, and the parameters of these functions are estimated by maximum likelihood methods (see Appendix). Given the dynamic character of the model, values of some exogenous variables at different points in time are taken into account. These time-related measures characterize individuals during the year in which an event occurs. The parameter estimates reflect the influence of temporal changes of the explanatory variable on the instantaneous risk of changing functional states over the study period. Some time-invariant covariates are also included in various estimates of the model. Because in this paper the same vector of explanatory variables is used to estimate the n_{ij} and m_{ik}, we can represent the dynamic events model as:

$$\ln n_{ij}(t) = \underline{X}(t)\ \underline{a}_{ij} \qquad (2)$$

and

$$\ln m_{ik}(t) = \underline{X}(t)\ \underline{b}_{ik} \qquad (i,\ j=1,\ 2;\ k=3,4;\ i\neq j\neq k)$$

where $\underline{X}(t)$ is the vector of explanatory variables at the time t and $\underline{a}$ and $\underline{b}$ vectors of coefficients to be estimated by maximum likelihood methods. The estimated covariance matrix is used to derive asymptotic standard errors to test the statistical significance of each coefficient under the null hypothesis.

Construction of Outcome Variables

Functional status durations are constructed from responses to work limitation questions included in ten of the NLS follow-ups over the period 1966-1981; survivorship durations in each of the two states are computed from the survey year that death is first reported or the year in which the failure to be interviewed for any reason other than death is first noted. Work limitation responses proxy functional capability at various points in time by indicating whether respondents had health conditions that prevented working or limited the amount or kind of work they could do. The absence of a work-limiting health problem means that the individual is functional in that year, while its presence is used as evidence of functional incapacity or disablement. The functional capacity of respondents for the years in which no follow-up was conducted is assumed to be the same as his status in the subsequent survey year. Thus, each surviving respondent's functional capacity is coded for each year of the study period (or, for nonsurvivors, each year of the fraction of that period they were alive). It should be noted that the empirical analysis assumes arbitrarily that an individual categorized as, say, functionally capable in a given survey year is capable for that entire year. Events or transitions between states occur between years, and durations between events are measured in years. The period of time encompassed by the NLS follow-ups is of course sufficiently long to observe a variety of different patterns or profiles of events between functional capability and disability, between disablement and functional capacity and between either of these health-related states and death or loss to follow-up.

Explanatory Variables

The several variants of the health-events model estimated below draw on various combinations of measures reflecting the influence of aging, socioeconomic status, physical/psychological and genetic factors on functional capacity and length of life. The full set of these regressor or explanatory variables includes:

Age. A time-invariant, continuous measure of the age of respondents in 1966 in years.

Blue Collar. Dummy variable taking the value of one if the respondent worked as a craftsmen, operative or nonfarm laborer in 1966, zero otherwise.

Duncan Index. Continuous measure of the respondent's socioeconomic status in 1966 as characterized by the Duncan Socioeconomic Index of All Occupations of his 3-digit occupation code. The index assigns a two-digit status score to each 3-digit occupational category in the Census classification scheme. The Duncan scores range from 0 to 96, and reflect for each occupation (1) the proportion of male workers in 1950 with educational attainment of four years of high school or more and (2) the proportion of males with incomes of $3,500 or more in 1949.

Foreign Born. Dummy variable taking value of one if the respondent was not born in the United States, zero otherwise.

Geographic Immobility. Dummy variable taking the value of one if the respondent reported that his 1966 county of residence had been his residence "all of his life," zero otherwise.

Impairment Status. A time-varying, continuous index characterizing the degree of physical and emotional impairment of the respondent in year t. The impairment index was developed from responses to a battery of questions asked in the 1971, 1976 and 1981 follow-ups. The impairment indexes summarize whether respondents are functionally impaired (have difficulty in walking, using stairs, standing, sitting, stooping, lifting light and heavy weights, handling, reaching, seeing, hearing, and dealing with people) and the extent of the severity of each item; they also summarize whether respondents experience signs or symptoms of a health problem such as shortness of breath, pain, tiring easily, aches, fainting, anxiety, or weakness. Values of the impairment index for intervening years were interpolated linearly to gauge likely changes in impairment status for transitions occuring during the years when impairment data were not obtained.

Industry. Dummy variable equal to one if the industrial attachment of the respondent's 1966 job was agriculture, mining, construction, manufacturing, transportation-public utilities (SIC codes 017-499), zero otherwise.

Job satisfaction. Dummy variable taking the value of one if the respondent reported that he liked his 1966 job very much or fairly much, zero otherwise.

Marital Status. Dummy variable taking the value of one if the respondent was married, spouse present, zero otherwise.

Parents' Longevity. A measure of longevity of the respondent's parents to proxy for the influence of genetic inheritance on both health and length of life.[28] Respondents were asked in selected reinterviews whether either or both parents are still alive. A dummy variable is constructed taking the value of one if neither parent was living when the respondent was

55-59 years of age, zero otherwise. Roughly speaking, this measure divides individuals whose parent(s) failed to live into their eighth decade from those enjoying above average length of life. We anticipate that greater genetic health stock indicated by the longer life span of parents will reduce the risk both of functional disability and death.

Pension Eligibility. A dummy variable taking the value of one if the respondent was covered by Social Security and by private pension, zero otherwise. This variable tests whether functional incapacitation or restoration differs between eligible and ineligible respondents; it also tests whether the survival or attrition experiences of these two subpopulations are comparable.

Race. A dummy variable equal to one if the respondent is black, zero otherwise.

Retirement Status. A time-varying dummy variable taking the value of one if the respondent reports himself retired in year t, zero otherwise.

Schooling. Formal schooling completed in 1966 measured continuously in years.

Social Support. A vector of time-varying dummies taking the value of one if the respondent reports himself married spouse present or unmarried but living with persons other than a spouse in year t, zero otherwise. The referent (omitted) group for both variables are unmarried men living alone.

Wage. Hourly earnings of the respondent in 1966.

Specifications and Sample Universes

Various subsets of the above regressor variables referring to different subuniverses of the total NLS panel are used to estimate the relationships of interest. While the exact specifications and sample universes for each model are described fully in the following sections, two general points may be noted here. First, identical subsets of regressors are used to account for all six events or transitions for given subgroups of respondents. This strategy is adopted primarily to ensure that estimated coefficients on variables of special importance can be interpreted and/or that potential biases attributable to sample selectivity can be identified. The extent to which individuals with a given characteristic are more likely either to die or to be lost to follow-up and, thereby, less likely to be observed moving between (transient) states may influence the estimated coefficient on that characteristic with respect to a given incidence rate. Measuring the influence of that characteristic on death and loss to follow-up (on the simplifying assumption that the same probability distribution function applies) helps assess these findings.

Second, Equation (2) takes into account uncompleted spells of functional capability or incapacity as well as unobserved or unrealized changes in functional status spells attributable to death and loss to follow-up (i.e., right-side censoring). That is one of the principal advantages of this modeling strategy. The data and period of the analysis, however, are also susceptible to left-side censoring or, what is sometimes called, the initialization problem. Simply put, it is unclear whether the same model or probability generating function is responsible for the health histories of respondents up to the point at which the interview started and, of course, the data set includes too little information to characterize earlier history. To help in interpreting the results of the estimated models, we restrict attention to outcomes occurring over the period 1971-1981. Time-invariant regressors, however, in most cases take their 1966 value so that selectivity effects of earlier history can be minimized. In the analysis of policy effects on disablement, for example, the subuniverse is restricted to men who were healthy enough to be working in 1966 and still alive at the beginning of the study period in 1971. Covariates are measured in 1966 values in the analysis, which further reduces selectivity effects. Thus, the analysis focuses on the death and disability experiences of men who were relatively healthy five years before those outcomes were observed. Their health histories after that point, as reflected in the incidence of disablement and death, is then tracked by the events-history model.

IV. IMPAIRMENT DIFFERENTIALS IN DISABILITY AND DEATH

Earlier cross-sectional estimates for NLS Older Men show that the labor force participation rates for respondents reporting a work disability is on average lower than their nondisabled counterparts by about 4 percent for whites and more than 17 percent for blacks.[29] These estimates imply that the rapid rise in disability prevalence depicted in Figure 1 above, especially for men 45-64 years of age, must be responsible for a considerable portion of the concommitant rise in male labor force nonparticipation. Whether this relationship means that health levels of these men have deteriorated and, correspondingly, that early withdrawals from the work force are involuntary responses to poor health, however, remains unclear. Cross-sectional analyses suggest that the probability of reporting disablement varies systematically with economic as well as health factors, and that perhaps only two-thirds of the measured disability effect on labor force participation can be attributed to health (impairment) differences between disabled and nondisabled individuals.[30] In this section, we use the dynamic model of health-related events to ascertain whether the longitudinal relationships between impairment, economic factors and disability are similar to these cross-sectional findings. The longitudinal analysis has the added advantage of testing the effect of these factors on survival and, thereby, of casting light on recent early retirement studies using mortality experience to proxy for health status.[31] A pension eligibility variable is introduced into the analysis to help appraise the results of these early retirement studies.

More particularly, the variant of the health-events model estimated in this section includes impairment, wage and pension eligibility variables, and controls for age, genetic factors, occupation and industry attachment. The model is estimated for a subsample of men who were employed as wage or salary earners in 1966 and thus reported an hourly wage rate for that year. Because the estimates are restricted to outcomes occurring over the period 1971-1981, potential sample selectivity bias arising from the use of observed (1966) wages should be minimized. Since men at work are comparatively healthy, this sample universe should not be biased in respect to health prognosis. The model is estimated separately by race, in part to offset the influence of oversampling of nonwhites in the NLS design, and in part to see whether the variations in prevalence between whites and blacks noted above in Section II continue to be detected in a multivariate framework.

Table 6 presents estimated coefficients on the three variables of primary interest for transitions between functionally capable and disabled states and between each of those states and death. The complete estimating equations for all events and all explanatory variables as well as summary statistics are set out in Appendix Tables A. 1 and A. 2. As expected, intertemporal changes in impairment status significantly raise the incidence of disability and impede the recovery from disability. These coefficients, which are remarkably similar for both white and black men, translate as roughly a 16 percent differential between the moderately impaired and unimpaired and 75 percent between substantially and moderately impaired for the transition between functional and disabled states. The larger, negative effect of impairment on the (instantaneous) likelihood of returning to functional capacity once having been disabled suggests of course that the more impaired are less likely to recover, but it does not rule out such changes. Calculated at the mean of the sample, for example, the expected duration (of that year) for whites in the disabled state is 0.23 months while their expectation for the functional state is 11.6 months. Given the changes in impairment status described in an earlier section, these durations doubtless reflect movements attributable to both

Table 6. Pension, Wage and Impairment Effects on Selected ln Incidence Rates by Race

Effects[a]	Estimated Coefficients[b]			
	Functional to Disabled	Disabled to Functional	Functional to Death	Disabled to Death
White				
Impairment	0.0001^{***}	-0.0006^{***}	0.0002^{***}	0.0001^{**}
Wage	-0.0006^{***}	0.0003^{*}	-0.0016^{**}	-0.0014^{***}
Pension Eligibility	-0.1431^{**}	-0.0061	-0.6091^{***}	0.1715
Black				
Impairment	0.0001^{***}	-0.0005^{***}	0.0002^{***}	0.0001
Wage	-0.0006^{*}	0.0005	-0.0006	0.0009
Pension Eligibility	-0.2682^{***}	0.3015^{**}	-0.6540^{***}	-0.2294

a. See text for definitions.

b. See Appendix Tables A.1 and A.2 for complete estimating equation and summary statistics.

*** $p \leq .01$; ** $p \leq .05$; *$p \leq .10$; one-tailed test.

incidence and restoration. All things equal, more impaired individuals are likely to die, the force of mortality rising by 0.0002 for each unit change in impairment of those men last observed in the functional state. The impairment effect for those already disabled is not as great and is, in fact, insignificant at conventional levels for blacks. This relationship is discussed more fully below.

Table 6 shows, nonetheless, that impairment is not the only factor influencing these health-related outcomes. Of special interest from the viewpoint of the link between disability and nonparticipation trends are the influences of the economic variables, wages and pension eligibility. In the former case, wages have a significantly negative effect on the incidence of disability for both whites and blacks as predicted by the opportunity cost argument. Wages influence recovery and mortality, however, only for whites. These findings are consistent with Grossman's model that the demand for, and thereby investments in, health by individuals rises with their market wages and results in positive increases in "healthy time."[32] The absence of wage effects on recovery and mortality of black men suggests that they are less able to invest in health and their durations of time spent healthy (and alive) are affected as a result.

Pension eligibility has a significant effect on disablement; but, perhaps surprisingly, this effect is negative, with pension-eligible men of each race substantially less likely than those not eligible to be disabled. Pension-eligible blacks are also more likely to recover from disability than their pension-ineligible counterparts. Given the character of the disability (work limitation) outcomes, these findings suggest that pension-eligible men have different health behaviors leading to greater commitment to market work, perhaps as a means of maintaining their eligibility status. Whether this offsets the positive inducements of such status to reduce the overall length of work life by retiring early is unclear. Yet the interaction probably contributes to upwards bias in the estimated effects of pension eligibility on early retirement trends. The significant negative effect of pension eligibility on the risk of dying for functionally capable white and black men alike is equally noteworthy. The estimated coefficients strongly suggest that the pension-eligible subpopulation has different life table values than the noneligible. This possibility adds some weight to inferences about the influence of poor health on early retirement from some studies using the mortality experience of early pension claimants as a health status proxy.[33]

The evidence presented in Table 6 suggests generally that rising work disability prevalence rates of American men does not wholly reflect deterioration in underlying physical and psychlological capacities. National trends must be interpreted cautiously and the interpretation must account for economic preferences as well as health-related factors. The findings also suggest that estimated health effects on labor force nonparticipation using these disability measures are biased. Interestingly, inducements arising from pension eligibility may counter this bias to some extent because pension-eligible men have higher life expectancies and/or are induced to greater work effort (fewer periods of disablement) in order to maintain eligibility. These relationships make predicting the consequences of policy changes more difficult. On the one hand, changing the criteria of pension eligibility may not reduce the number of men seeking to retire early for reasons of poor health. On the other, such changes may well raise the likelihood of being disabled by poor health earlier in the work-life cycle. Permanent labor supply, in other words, may not differ between the two policy regimens, but policy changes may cause different time allocations over the life cycle.[34]

More analysis of this possibility seems warranted.

V. RETIREMENT EFFECTS ON DISABILITY AND DEATH

Previous research on the adverse health consequences of retirement has been confounded by the absence of suitable health status indicators, by the complications of modeling the direction of causality between health changes and retirement, and by the difficulty of disentangling pre-and post-retirement health changes and the "normal" changes in physical and psychological functioning attributable to the aging process. Many studies have used simple self-rated health measures, which are of course difficult to interpret. Recent investigations have restricted attention to more objective, easily measured health events, particularly death.[35] While mortality may occur after retirement, it cannot be directly attributable to retirement unless pre-retirement health is suitably controlled. Even under ideal circumstances, such control variables are not easily measured and/or separated from the forces shaping the decision to retire itself. Furthermore, some conceptual models, such as the life-change framework that links health conditions to retirement-related outcomes in terms of the stress created by dramatic shifts in life circumstances, cannot separate the effects occurring before and after retirement.[36] The inherent difficulty of deciding whether the stress occurs because of the "anticipation" of the event or the event itself is a case in point. Because retirement is a life event only for older individuals, distinguishing between health conditions, many chronic in character, that would have occurred as a normal effect of aging is also conceptually and methodologically difficult to handle. It is hardly surprising that conflicting findings about the health effects of retirement have been reported in the literature.

This section presents the results of a variant of the health-events model designed to test whether retirement has deleterious health effects. The model follows recent practice in using disability and mortality as the outcomes influenced by retirement.[37] Retirement is gauged as a time-varying self-report of the respondent's retirement status in any given year over the period 1971-1981. In contrast to earlier studies, however, retirement effects are separated into their influence on disability and, then, death or either of these outcomes alone. Moreover, the model controls for (time-varying) impairment status in each year of the study period but makes no attempt to distinguish pre-and post retirement differences in impairment status. Even though it might appear necessary or desirable to model the influence of retirement on impairment, the difficulty of identifying specific retirement effects as opposed, say, to the anticipation of retirement before the event and/or the effects of aging after the event argues against this analytic approach. Impairment changes represent a proxy for underlying health prognosis; the model tests whether outcomes, given that prognosis, are more severe for retirees. In contrast to the earlier literature, the model estimated here does not assume a unique relationship between impairment and disablement, but rather that various choice elements also influence such outcomes. Thus, the model tests whether retirement raises the risk of disability or death, controlling for the entire set of determinants of these outcomes.

In addition to age and genetic factors, the model includes several control variables suggested by findings in the earlier literature. Occupation, industry and education are incorporated to test for the influence of socioeconomic status detected in several studies. A vector of social support variables are also included to test whether the outcomes of married or unmarried individuals living with others differ from those living alone by virtue of socio-psychological support mechanisms provided by these social arrangements.[38] This retirement model is estimated for all NLS men who had not declared themselves retired by 1971. As before, the outcomes are restricted to the period 1971-1981 while the time-invariant control variables are measured in terms of their 1966 values to minimize selectivity effects.

Table 7 presents estimated coefficients for selected variables and transitions in this version of the health-events model. As before, the complete results for all explanatory variables and transitions are set out in the Appendix, Tables A.3 and A.4. Estimated coefficients on movements between transient states provide strong evidence that retirement is more likely to be a consequence than a cause of disablement for the (initially) nondisabled, but a factor contributing to longer durations of disability for those already disabled. The estimated force of mortality for retired men, however, does not differ significantly from those continuing to work. These findings provide little support for the stressful life-events paradigm except insofar as such stress might exacerbate conditions contributing to the length of disability spells. The absence of retirement differentials in mortality experience confirms the findings of other longitudinal investigations.[39]

The results of this model also fail to detect the potential mediating effects of social support as evidenced by the general absence of signficiant coefficients on the vector of marital status-household composition variables. Mortality experiences of men living with others or alone do not differ at conventional confidence levels. The only influence of these factors for white men is the comparatively shorter duration of disability observed for married individuals living with their spouses. This finding suggests that spouses make it possible to cut short disability spells and/or that the opportunity costs of disability are greater for men with spouses. In

Table 7. Retirement and Social Support Effects on Disability and Death by Race

Effects[a]	Estimated Coefficients[b]			
	Functional to Disabled	Disabled to Functional	Functional to Death	Disabled to Death
White				
Retired	-1.5230***	-1.4790***	9.6110	9.147
Social Support				
Married, Spouse Present	0.0868	0.3608**	0.1266	-0.1113
Unmarried, Living with Others	0.0809	0.2536	0.1519	0.0833
Impairment	0.0001**	-0.0005***	0.0001*	0.0002***
Black				
Retired	-1.2640***	-1.392***	9.190	9.2250
Social Support				
Married, Spouse Present	0.0939	-0.0414	-0.6294	-0.2209
Unmarried, Living with Others	0.3684**	-0.1486	-9.180	0.4575
Impairment	0.0001*	-0.0004***	0.0001	0.0001

a. See text for definitions.

b. See Appendix Tables A.3 and A.4 for complete estimating equation and summary statistics.

*** $p \leq .01$; $^{**}p \leq .05$; $^{*}p \leq .10$; one-tailed test.

contrast, household differences appear to have greater influence on black men, as evidenced by the insignificant coefficients on all social support variables except disability incidence for the unmarried living with others. The factors contributing to this differential risk are unclear.

The findings presented in this section fail generally to confirm the claims that retirement is harmful to health and that social support networks mediate outcomes, especially after stressful life-events such as retirement. However, the inherent difficulty of testing any hypothesis about the effects of retirement on subsequent health status must be kept in mind in interpreting these findings. The health-events model has the advantage over other study designs of being able to control for physical and choice factors likely to influence adverse health outcomes at any point, thus enabling any rise in the likelihood of such risks in the post-retirement period to be isolated. Yet the possibility that the process of anticipating retirement and the typical "honeymoon" phase immediately following the event also influence these control variables cannot be completely ruled out; some coefficients may accordingly be biased. Yet the failure in earlier studies to recognize that disability status responds to economic preferences as well as underlying health conditions also created biases in their findings, and these biases may be greater than those arising in the health-events model. The possibility exists that bias also arises from measuring functional capacity as the absence or presence of limitations in role responsibilities because the perception of those responsibilities changes dramatically after retirement. Such a bias is a weakness of all behaviorial indicators of health status. Since survey questions about activity limitations allow the respondent individual flexibility in interpeting role responsibilities, the potential bias of using such measures is unlikely to be great. The fact that mortality experiences of disabled or functionally capable men does not differ by retirement status argues further against the likelihood that such measurement bias is great.

VI. HUMAN CAPITAL AND DEMOGRAPHIC DIFFERENTIALS IN DISABILITY AND DEATH

Human Capital Effects

The results presented thus far show that health-related outcomes are influenced by economic characteristics, but they do not necessarily account for the kinds of causal mechanisms or pathways by which these factors exert such influence. In this subsection, we test whether men with more human capital are better producers of healthy time as suggested by Grossman's household production model.[40] More particularly, Grossman's empirical analysis of health demand is based on a reduced form equation implied by a production function for "healthy time" and an investment function with inputs of individual time and market goods. For adults, Grossman finds a significant cross-sectional effect of schooling on self-rated health, controlling for wages and other socioeconomic characteristics including job satisfaction. He also finds a significant (negative) schooling effect on mortality experience in a separate analysis. He interprets these findings as evidence that individuals with more human capital produce health more efficiently. His results are quite important in the context of the present paper because they suggest that men forced out of the work force by poor health are unlikely to have substitutable human capital attributes--indeed, that health status will compound their already disadvantaged position in the labor market.

Grossman's schooling hypothesis is tested in the continuous-time, Markov framework using schooling, wage, job satisfaction and other socioeconomic covariates. Although our model imposes a slightly different functional form on the underlying healthy-time production function assumed by Grossman and models "health capital" explicitly, the general specifications of the vector of covariates in each model are quite similar. Because wages are included, the model is estimated for the restricted subuniverse of wage and salary earners reporting hourly earnings in 1966. As in the models presented previously, other time-invariant regressor variables take their 1966 value to reduce selectivity bias. Table 8 sets out selected findings (and Appendix Tables A.5 and A.6 present the complete results) of this human capital version of the health-events model.

Two findings warrant comment. The first is that individuals with more schooling spend longer periods of time functionally capable as evidenced by the significantly negative coefficients on the functional to disabled transition. Whites are marginally more likely than blacks to stay nondisabled, but the absolute effect is not great. In contrast to the Grossman's general findings, however, there is no evidence that schooling experiences influence length of life. Equally important is that schooling has no influence, controlling for impairment, on the ability of men to return to functional capacity once they are disabled. Although the use of medical care and rehabilitation services is unobserved in the model, the expectation is that more efficient health "producers" might be better able to recover, all things equal. It is possible, although unlikely, that the absence of schooling effects on these transitions stems from the use of a linearly continuous measure of years of formal schooling completed. It is also possible that these men are too old for the influence of their schooling to be detected, i.e., that schooling plays a more prominent role in health decisions at younger ages.

Second, Table 8 shows that job satisfaction also has a significantly

Table 8. Schooling, Job Satisfaction and Impairment Effects on Disability and Death by Race

Effects[a]	Estimated Coefficients[b]			
	Functional to Disabled	Disabled to Functional	Functional to Death	Disabled to Death
White				
Schooling	-0.0321***	0.0085	0.0029	-0.0242
Job Satisfaction	-0.1449*	-0.1076	0.0342	0.0762
Impairment	0.0001***	-0.0006***	0.0002***	0.0001*
Black				
Schooling	-0.0260**	0.0093	0.0147	0.0299
Job Satisfaction	-0.3241**	0.0133	-0.7108**	-0.7175
Impairment	0.0001***	-0.0005***	0.0002***	0.0000

a. See text for definitions.

b. See Appendix Tables A.5 and A.6 for complete estimating equation and summary statistics.

*** $p \leq .01$; ** $p \leq .05$; * $p \leq .10$; one-tailed test.

negative effect on the incidence of disability for both white and black men; the net effect for white and black men indicating in 1966 that they liked their job very much or fairly much were 13 and 28 percent, respectively, less likely to have become disabled over this period than men who did not like their job. Since the opportunity cost of time and impairment status are controlled for, this difference suggests that motivations influenced by situational factors play some role in health-related outcomes. Perhaps most interesting in this respect is that job-satisfied, functionally capable black men are less likely to die than their counterparts who are dissatisfied with work. This effect is not, however, observed for white men.

The estimates for the human capital version of the health-events model confirm the general predictions of Grossman's household production model that human capital formation through schooling can have a positive effect on health status and, thereby, that policy interventions designed to augment human capital can have an important secondary impact on functional capacity. We find, however, that this schooling effect occurs by preventing departures from functional capacity rather than by fostering the recovery of already disabled men. We speculate the reason for this one-way effect is that schooling influences lifestyle and preventive health behavior more than the ability to use (curative) medical care once functional capacity is impaired. That schooling has no influence on life expectancy appears quite surprising and contradicts the findings of other studies.[41] Many of these studies, however, were cross-sectional designs unable to control for dynamic changes in impairment status and other socioeconomic control variables.

Race and Age Cohort Effects

The possibility that life expectancy improvements leading to rising disability prevalence rates differs among demographic subgroups is examined in this subsection. Ideally, the connection between these outcomes might be gauged by first identifying the factors that influence recent increases in life expectancy and then appraising the net effects of those factors on the risks of disablement. Unfortunately, little is presently known about which subgroups have been favored by changes in mortality trends over the recent past. It is unclear, for example, whether mortality rates have declined more rapidly for high or low income individuals and thus whether these improvements have served to lower or raise disability prevalence for these persons. Detailed studies of decendent characteristics at different points in time must be conducted before such trends can be identified. Some preliminary inferences may be developed, however, by appraising the effects of demographic factors known to differ in terms of mortality experience. The influence of race and age cohort effects on death and disablement are analyzed here with this goal in mind.

Race differentials in mortality are quite large, with age-adjusted rates for black men at present about 44 percent higher than white men. While both white and black death rates have declined over the past quarter-century, the decline has been marginally greater for whites so that the mortality gap has not narrowed significantly. Insufficient aggregate data are available to trace the influence of these changes on disability trends by race.[42] The common assumption, however, is that black men are also more likely to be disabled. We analyze race differentials in the framework of the health-events model to provide a preliminary view of the connection, if any, in these dynamics. This variant of the model is designed to include as many members of the NLS panel as possible so the sample restriction that respondents must be wage and salary earners in 1966 is removed. Given this change, we use Duncan Index scores to proxy for economic status; impairment, age, marital status and several other control variables are also included. In one version, a race variable (taking the value of one if the respondent is black, zero otherwise) is incorporated in a model estimated for the larger universe of respondents to gauge the main effects of race on health-related outcomes. The model is then re-estimated for each race separately to measure possible interaction effects. Selected findings of these models are presented in Table 9; Appendix Tables A.7-A.9 present the complete results.

The first row in Table 9 confirms that black men indeed have higher risks of death than white men. It is noteworthy, however, that race effects are more pronounced for the transition between functionally capable and death than for the transition between disability and death. While there is a race effect on the risk of disablement, it is accordingly much smaller in magnitude than the differntial in the risk of death. We interpret these findings as generally consistent with the view that improving mortality experience is associated with rising disability prevalence. The considerably higher mortality risk of blacks than whites of comparable age while functionally capable suggests that fewer blacks enter the pool of persons at potential risk of disability. The comparative smaller differential between whites and blacks in the risk of death once disabled implies that mortality improvements are more likely to influence the risks of death from the functionally capable state. When mortality falls, the pool of disabled persons is increased. The interaction or joint effects of race and other key variables also support this interpretation. The influence of age is similar for both races, even though the gradient effect of age is greater for blacks by virtue of their shorter

Table 9. Main and Selected Interaction Effects of Race on Death and Disability

Effects^{a}	Estimated Coefficients^{b}		
	Functional to Death	Disabled to Death	Functional to Disabled
Main Race Effect	0.4175***	0.2286**	0.0906**
Interaction Effects, White			
Age	0.0805***	0.0480***	0.0522**
Impairment	0.0002**	0.0001**	0.0001***
Duncan Index	-0.0096***	-0.0019	-0.0091***
Parents' Longevity	-0.1055	0.0808	0.0939*
Interaction Effects, Black			
Age	0.1098***	0.0675***	0.0606***
Impairment	0.0002***	-0.0000	0.0001***
Duncan Index	-0.0035	0.0017	-0.0086***
Parents' Longevity	-0.3756*	0.3956**	0.0707*

a. See text for definitions.

b. See Appendix Tables A.7-A.9 for complete estimating equations and summary statistics.

$^{***}p \leq .01$, $^{**}p \leq .05$, $^{*}p \leq .10$, one-tailed test.

expected length of life. Impairment effects are also similar. Race differences do not appear to stem from genetic inheritance as evidenced by the mixed results on the parents' longevity variable. Only the coefficient for whites on the incidence of disability and the coefficient for blacks on the mortality risk while functionally capable are noteworthy. The differences in the effects of socioeconomic status are more interesting. The Duncan Index is significantly negative for the mortality of functional whites but statistically insignificant for blacks. This finding may reflect that mortality reductions for white men favored those at lower levels of socioeconomic status. Similar effect for blacks may also be detected when their mortality risks are reduced.

In view of the steady historical decline in male mortality rates during the 1970s, it is also possible to use the effects of different age-cohorts on health-related events as a means of drawing inferences about the connection between declining mortality and rising disability prevalence. Even though the time span and age range of the NLS panel is not ideally suited for such a test, we estimate a variant of the health-events model in which the pattern of outcomes over two five-year periods was linked to two five-year age cohorts. More specifically, subsamples of outcomes over the periods 1971-1976 and 1976-1981 for men aged 60-64 at the beginning of each of these two periods were combined (with a dummy cohort variable taking a value of one if the respondent was a member of the first cohort, zero otherwise) to test whether individuals entering their seventh decade earlier or later in the decade of the 1970s differed in their health-related outcomes. Similarly, cohorts of men aged 55-59 either at the beginning of the period 1971-1976 or the beginning of the period 1976-81 were selected, again with a dummy variable indicating whether they were a member of the first of these two cohorts.

Table 10 summarizes selected findings from these estimates; Appendix Tables A.10-A.11 present the full results. Given the comparatively short span of time over which we attempt to measure cohort efforts, it is perhaps noteworthy that any significant differences are found. Yet Table 10 shows that the cohorts differ significantly in terms of the incidence of disablement. Men in each age group were less likely to have been disabled if they were part of the earlier cohort. Furthermore, for men 55-59, this early cohort was more likely to die when disabled than the later group; this effect was not found, however, for older men 60-64 years of age. The cohort effects that are detected, nonetheless suggest responses associated with a changing environment, including continuing declines in age-specific mortality rates.

Weak evidence of a connection between improving mortality and rising disability prevalence has been found in this section. Race differences in mortality reflect differential risks of death and disability under different life table expectations. Age cohort effects also suggest that men with more favorable life table expectations have less favorable disability experiences, all things equal. These findings may, of course, be explained by some unidentified "third" factor that accounts simultaneously both for declining mortality and rising disability. (The possibility that medical care is such a factor cannot be easily discounted; unfortunately, it cannot be tested with the data at hand.) The findings are nonetheless suggestive enough to warrant more detailed analysis. Since earlier studies show disablement to have adverse effects on work activity, the relationship between improving mortality and the projected labor force of older persons would be an especially fruitful focal point for such analyses.

Table 10. Cohort and Race Effects on Death and Disability by Age Group

Effects[a]	Estimated Coefficients[b]		
	Functional to Death	Disabled to Death	Functional to Disabled
Men Age 55-59			
Cohort	0.1247	0.4293^{***}	-0.1278^{**}
Race	0.3634^{*}	0.1858	0.0694
Men Age 60-64			
Cohort	-0.1511	-0.0278	-0.1513^{**}
Race	0.1414	0.2000	0.1293^{*}

a. See text for definitions.

b. See Appendix Tables A.10 and A.11 for complete estimating equations and summary statistics.

$^{***}p \leqslant .01$; $^{**}p \leqslant .05$; $^{*}p \leqslant .10$, one-tailed text.

VII. DISCUSSION

Considered jointly, the results of the preceeding events-history analyses suggest a complex and perhaps unexpected set of interrelationships among recent historical trends in work activity, disability and mortality. The rapid rise in prevalence rates of functional disablement reflects deteriorations in the physical and psychological capacities of older American men that, in turn, appear to stem from recent improvements in longevity. Labor force participation rates of these men have declined as a direct consequence of these impairment factors and indirectly from extended length of life. Although labor force behavior has clearly been influenced by inducements arising from more generous benefits of social insurance and private pension programs, health (disability) behavior is also shown to vary by whether men are eligible for such benefits. This interaction effect confounds attempts to gauge the extent to which declining work activity can be attributed to health or pension factors and, thereby, the extent to which the labor supply of older men might respond to modified program parameters. While early withdrawal from work may be caused by health problems, there is little evidence to support the claim that retirement harms health. This result adds further weight to the conclusion that declining work activities of older men is an outcome shaped by dynamics changes in the risk of functional incapacity and life expectancy.

At least two aspects of these general findings warrant closer attention by social policymakers and planners. First, even though functional disability status is determined by a variety of factors, the rising risk of disablement reflects a population subgroup growing on average less "healthy" over time. Demands for social/medical care services and income maintenance will continue to expand rapidly; reallocations of resources away from acute-curative care towards long-term care aimed at achieving greater functional independence will also continue, the pace governed perhaps by the extent to which mortality rates continue to fail. Yet, the dynamic character of underlying impairment characteristics of older men must also be kept in mind. Evidence that individuals acquire new problems and recover from old ones over time suggests that health-related disabilities are not always permanent or irreversible. It follows that disability prevalence data are not precise indicators of the number of men in continuing poor health who cannot be expected to work. It also follows that social policies should accord priority to interventions aimed at reducing the duration of disability spells. Factors identified in the social estimates of the health-events model as serving to shorten such durations should be considered in designing these interventions.

Second, policymakers should also give more attention to selectivity effects on target populations of older men. The analyses above showed clearly, for example, that economic status plays a prominent role in determining the likelihood of being disabled. The analyses also showed significant differences in mortality experiences by income level. Of special interest in this regard were the mixed results of education on functional disablement. Contrary to expectations, schooling does not significantly influence mortality or the ability of men to recover from a disability. Yet schooling is associated with longer durations in the functionally capable state. Given the greater likelihood of work activity for men in that state, human capital investments yield porportionately higher (discounted) yields over the life cycle than is even commonly reflected in standard cross-sectional rate of return computations. Men with low levels of schooling, then, will be more likely to have health problems as well as lower permanent earnings potential. This compounding of disadvantages contrasts sharply with the selective subpopulation of men who are eligible for public and private pensions and who, thereby, are less likely to have a health-related problem by virture of their longer life expectancy and longer durations as functionally able. These selective advantages and disadvantages should be weighed carefully in appraising alternative policies that cushion the adverse economic consequences of poor health while reducing the disincentives to continued attachment to the work place.

FOOTNOTES

1. See, for example, Boskin (1977); Burkhauser (1980); Burtless and Moffit (1984); Diamond and Hausman (1984); Hanoch and Honig (1983); Mitchell and Fields (1984); Parsons (1980); Quinn (1977); and Slade (1984).

2. Cf., Danziger, Haveman and Plotnick (1981); Also see Chirikos and Nestel (1981 and 1984); Haveman, Wolfe and Warlick (1984); Parnes (1983); and the literature cited in footnote 1 above.

3. See Haveman and Wolfe (1984); Parsons (1984) and the original analysis in Parsons (1980).

4. See, for example, Wan (1983) and the literature cited therein.

5. Ekerdt, et al. (1983).

6. Minkler (1981).

7. See Asher (1984) and Broadhead, et al. (1983).

8. Cf., Manton (1982).

9. Fries (1980 and 1983).

10. Schneider and Brody (1983). Also see Feldman (1983) and Verbrugge (1984).

11. See, for example, Nagi (1976). Also see Wilson and Drury (1981).

12. Various issues of Vital Statistics of the United States were used for this purpose. See, for example, U.S. Public Health Service, National Center for Health Statistics (1984).

13. Various issues of Vital and Health Statistics, Series 10 were used for this purpose. See, for example, U.S. Public Health Service, National Center for Health Statistics (1981).

14. Various issues of Handbook of Labor Statistics were used for this purpose. See, for example, U.S. Bureau of Labor Statistics (1980).

15. See Chirikos and Nestel (1981); Lambrinos (1981); Haynes et al. (1978); and Minkler (1981).

16. Parsons (1982).

17. Cf., Elneback et al. (1981).

18. Croog and Levine (1982) and Doehrman (1977).

19. Chirikos and Nickel (1984).

20. See, for example, U.S. Public Health Service (1973).

21. Chirikos and Nestel (1981 and 1982).

22. World Health Organization (1980). Our analysis uses the ability to walk, lift light weights, reach and handle as indicators of ambulation, locomotor, body movement and manual activity, respectively. See also Branch and Jette (1981) and Jette and Branch (1981).

23. CHRR (1981).

24. Fleiss (1981).

25. Chirikos and Nestel (1981 and 1982).

26. See, for example, Hadley (1982), Grossman (1983) Nagi (1976), and Chirikos and Nestel (1984) and the literature cited therein.

27. Tuma, Hannan and Groenveld (1979).

28. Cf., Vanderbrouche et al. (1984). Also see Hamermesh and Hamermesh (1983).

29. Chirikos and Nestel (1984 and 1985).

30. Chirikos and Nestel (1984).

31. See, for example, Hamermesh (1982), Kingson (1982), Myers (1982), Parsons (1980), Program Analysis Staff (1982), and Wolfe (1983).

32. Grossman (1972 and 1975).

33. Cf., Meyers (1982).

34. Cf., Burkhauser and Turner (1978).

35. See Minkler (1981) for a review of the literature.

36. Wan (1983).

37. Haynes, et al. (1978).

38. Broadhead, et al. (1983).

39. Haynes, et al. (1978).

40. Grossman (1972 and 1975). Also see Leigh (1983) and Fuchs (1982).

41. Cf., Hadley (1982) and the literature cited therein.

42. Published estimates from the National Health Interview Survey, for example, lack detailed racial characteristics by age. Among other things, this explains why national trends in disability discussed in Section II above were not divided by race.

43. The exposition here closely follows Chiang (1968).

44. We use the computer program developed by Professor Tuma of Stanford University to obtain these results. See Tuma (1980).

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Appendix

Transitional Probabilities and Expected Duration[43]

Transitional probabilities between transient states (p_{ij}) and into absorbing states (q_{ik}) as well as expected duration in a given state (Et_{ij}) may be computed from the incidence rates, n_{ij} and m_{ik}. The relationship between these values can be seen by first noting that transitional probabilities in some time interval (0, t) satisfy linear homogeneous differential equations of the following sort:

$$\frac{\partial p_{ij}}{\partial t}(0, t) = \Sigma_h p_{ih}(0, t) n_{hj} \qquad \text{(A.1)}$$

where n_{hj} are instantaneous transition rates defined in text equations (1a) and (1b), and the initial conditions are taken as $p_{ij}(0, 0) = 0$; $p_{ii}(0, 0) = 1$; $q_i(0, 0) = 0$. The solution of equations such as A.1 take the general form,

$$p_{ij}(0, t) = c_{ij} \exp(\lambda t) \qquad \text{(A.2)}$$

Solving for c_{ij} and λ in A.2 involves introducing a matrix of incidence rates. In our case,

$$N = \begin{bmatrix} n_{ii} & n_{ij} \\ n_{ji} & n_{jj} \end{bmatrix} \qquad (i \neq j) \qquad \text{(A.3)}$$

and the corresponding characteristic matrix,

$$N(\lambda) = \left[(\lambda I - N)\right]$$

$$= \begin{bmatrix} \lambda - n_{ii} & -n_{ij} \\ -n_{ji} & \lambda - n_{jj} \end{bmatrix} \qquad \text{(A.4)}$$

where I is the identity matrix. The determinant value of $N(\lambda)$, $N(\lambda)$ expanded fully appears as a second degree polynominal in λ, the coefficients being obtained from the n's. Equating this polynominal to zero yields a second degree equation, the so-called characteristic equation of $N(\lambda)$, with roots (eigenvalues) λ_1 and λ_2. That is:

$$|N(\lambda)| = 0 \tag{A.5}$$

$$\lambda^2 - (n_{ii} + n_{jj})\lambda + (n_{ii}n_{jj} - n_{ij}n_{ji}) = 0$$

so that $\lambda_1 = n_{ii} + n_{jj} + (n_{ii} - n_{jj})^2 + 4n_{ij}n_{ji} /2$

$$\lambda_2 = n_{ii} + n_{jj} - (n_{ii} - n_{jj})^2 + 4n_{ij}n_{ji} /2$$

Because the term under the radical in A.5 cannot be negative, λ_1 and λ_2 are real and, assuming $n_{ij} > 0$ and $n_{ji} > 0$, distinct. If so, substitution of A.2 into A.1 can be used to solve for the p_{ij} (0, t), viz.,

$$p_{ij}(0, t) = \sum_{\alpha=1}^{2} \frac{n_{ij}\exp(\lambda_\alpha t)}{(\lambda_\alpha - \lambda_\beta)} \qquad (\alpha \neq \beta) \tag{A.6}$$

and

$$p_{ii}(0, t) = \sum_{\alpha=1}^{2} \frac{(\lambda_\alpha + n_{jj})\exp(\lambda_\alpha t)}{(\lambda_\alpha - \lambda_\beta)} \qquad (\alpha \neq \beta)$$

The probability of death or other loss to follow-up q_{ik} (0, t) may now be written as the influence of the force of mortality or follow-up loss on individuals who either stay in the i^{th} state or move between states in the time interval (0, t). Since these movements can occur anytime before t, consider the time interval t* (t*, t* + Δ) where $0 < t^* \leq t$.

Then:

$$q(t) = \int_0^t p_{ii}(t^*)\, m_{ik}dt^* + \int_0^t p_{ji}(t^*)\, m_{ik}dt^* \tag{A.7}$$

So by substitution

$$q(t) = \sum_{\alpha=1}^{2} \frac{\exp(\lambda_\alpha t) - 1}{\lambda_\alpha(\lambda_\alpha - \lambda_\beta)} \left[(\lambda_\alpha - n_{jj})\, m_{ik} + n_{ij}m_{jk}\right] \tag{A.8}$$

Given the transitional probabilities , it is also possible to compute the expected durations in each state for individuals. Specifically, the expectation that an individual in state i at time 0 is in state j at time t* and remaining there for the duration (t^*, $t^* + dt^*$) is simply the sum over all values of t^* in the interval (0, t), i.e., the expected duration in state j is:

$$Et_{ij}\,(0,\,t) = \int_{0}^{t} p_{ij}\,(0,\,t^*)\,dt^* \qquad (A.9)$$

Substituting Equation A.6 into A.9 yields the following explicit formula for duration:

$$Et_{ij}\,(0,\,t) = \sum_{\alpha=1}^{2} \frac{n_{ij}}{\lambda_{\alpha}(\lambda_{\alpha} - \lambda_{\beta})}\left[\exp\,(\lambda_{\alpha} t) - 1\right] \qquad (A.10)$$

Likelihood Function and Predicted Incidence Rates[44]

Maximum likelihood methods are used to estimate the parameters on the log-linear relationship between the instantaneous transition rates, n_{ij} and m_{ik}, and the vector of explanatory variables, $\underline{X}$. The likelihood function for the constant rate Markovian model described above is simply the product of the exponential survivorship function and the incidence rates. For each sample member, let t_i represent the time an individual spends in state i; ν_{ij} the number of transitions from state i to state j; and μ_i an indicator variable equal to one if the individual dies or is lost to follow-up while in state i, and let S equal total sample size, the likelihood function may be very generally represented as

$$\mathcal{L} = \underset{i=1}{\overset{S}{\P}}\ \overset{2}{\P}\ \underset{j=1}{\overset{2}{\P}} \exp - \left[(t_i)\; n_{ii}\; \underline{X}\right]\left[\,n_{ij}\; \underline{X}\,\right]^{\nu ij}\left[\,m_{ij}\; \underline{X}\,\right]^{\mu i} \qquad (A.11)$$

In evaluating the expected durations in the text, the incidence rates were predicted by multiplying the vector of estimated coefficients $\underline{\hat{a}}_{ij}$ to specific values of the explanatory variables. Recall that some explanatory variables changed over the study period so the assumed values of these specific values of the explanatory variables. Recall that some explanatory variables changed over the study period so the assumed values of these variables refer either to fixed characteristics or time varying characteristics. Letting $\underline{X}^*$ represent the assumed values of the vector of independent variables, predicted incidence rates, say, $\hat{n}_{ij}$, are calculated as:

$$n_{ij}\ (t) = \exp\left[\hat{\underline{a}}_{ij}\ \underline{X}^*\right] \qquad (A.12)$$

Then by definition,

$$n_{ii}\ (t) = -\left[\sum_{j} n_{ij} + \sum_{k} m_{ik}\right] .$$

Table A.1 Determinants of ln Incidence Rates in Policy Model, 1971-1981: White Wage and Salary Earners

		Estimated coefficients (asymptotic t-ratios)					
Determinant	Means (Standard deviations)	Functional to disabled	Functional to death	Functional to follow-up loss	Disabled to functional	Disabled to death	Disabled to follow-up loss
Age	51.47 (4.26)	0.04631 (6.74)	0.05767 (2.30)	0.05777 (2.72)	-0.02654 (-3.09)	0.06209 (3.78)	-0.01825 (-0.68)
Impairment	2850 (1505)	0.00011 (5.02)	0.00020 (3.28)	0.00015 (2.66)	-0.00057 (-15.86)	0.00006 (1.79)	-0.00018 (-2.37)
Parents' longevity	0.7659 (0.42)	0.15400 (2.26)	-0.14080 (-0.61)	0.04707 (0.23)	-0.01277 (-0.14)	-0.00963 (-0.05)	0.26020 (0.88)
Blue collar	0.5581 (0.50)	0.17370 (2.65)	-0.35430 (-1.55)	0.27900 (1.35)	-0.10040 (-1.22)	-0.18080 (-1.19)	0.23290 (0.87)
Industry	0.6387 (0.48)	0.03463 (0.53)	0.64450 (2.59)	0.05070 (0.25)	-0.06285 (-0.76)	0.05959 (0.38)	0.19870 (0.72)
Wage	346.7 (185.1)	-0.00063 (-3.49)	-0.00161 (-2.23)	-0.00004 (-0.08)	0.00026 (1.44)	-0.00135 (-2.60)	-0.00036 (-0.46)
Pension	0.8290 (0.38)	-0.14310 (-1.85)	-0.60910 (-2.47)	-0.25470 (-1.10)	-0.00611 (-0.06)	0.17150 (1.00)	0.42240 (1.26)
Constant	-	-4.57600 (-12.35)	-7.18800 (-5.36)	-7.65200 (-6.68)	1.10200 (2.34)	-6.49000 (-6.96)	-3.50700 (-2.34)
-2 ln likelihood	-	125.51	33.49	19.07	424.65	27.49	12.45
Events	-	1253	95	130	763	218	80

Table A.2 Determinants of ln Incidence Rates in Policy Model, 1971-1981: Black Wage and Salary Earners

		Estimated coefficients (asymptotic t-ratios)					
Determinant	Means (Standard deviations)	Functional to disabled	Functional to death	Functional to follow-up loss	Disabled to functional	Disabled to death	Disabled to follow-up loss
Age	51.67 (4.09)	0.05726 (5.67)	0.10500 (3.45)	-0.00077 (-0.00)	-0.01162 (-0.86)	0.03664 (1.63)	-0.03619 (-0.58)
Impairment	2948 (1749)	0.00008 (2.67)	0.00022 (3.64)	-0.00050 (-1.40)	-0.00050 (-10.64)	0.00001 (0.38)	-0.00009 (-0.72)
Parents' longevity	0.8171 (0.39)	0.04024 (0.38)	-0.37340 (-1.29)	-0.64910 (-1.50)	0.05680 (0.40)	0.35890 (1.38)	-0.78710 (-1.55)
Blue collar	0.7244 (0.45)	-0.13400 (-1.36)	0.00713 (0.03)	-0.16390 (-0.34)	0.15700 (1.16)	-0.07037 (-0.34)	0.54010 (0.95)
Industry	0.6927 (0.46)	0.38230 (3.97)	-0.21560 (-0.81)	0.43020 (0.88)	-0.12960 (-0.97)	-0.38310 (-1.90)	-1.72000 (-3.26)
Wage	227.6 (97.81)	-0.00059 (-1.29)	-0.00061 (-0.43)	0.00131 (0.64)	0.00053 (0.91)	0.00091 (0.95)	0.00105 (0.42)
Pension	0.7194 (0.45)	-0.26820 (-2.76)	-0.65400 (-2.36)	0.44930 (0.71)	0.30150 (2.23)	-0.22940 (-1.13)	0.23220 (0.38)
Constant	-	-4.74700 (-8.55)	-8.95000 (-5.25)	-4.22600 (-1.46)	-0.26620 (-0.36)	-5.10800 (-4.03)	-2.04900 (-0.59)
-2 ln likelihood	-	72.82	37.12	7.28	198.75	11.91	15.02
Events	-	605	66	25	354	132	18

Table A.3 Determinants of ln Incidence Rates in Retirement Model, 1971-1976: White Men

Determinant	Means (Standard deviations)	Estimated coefficients (asymptotic t-ratios) Functional to disabled	Functional to death	Functional to follow-up loss	Disabled to functional	Disabled to death	Disabled to follow-up loss
Age	52.24 (3.90)	0.07411 (9.08)	0.11500 (2.33)	0.08867 (2.14)	0.03499 (3.36)	0.06533 (2.65)	0.01599 (0.38)
Impairment	2872 (1560)	0.00005 (1.94)	0.00015 (1.35)	0.00019 (2.35)	-0.00046 (-11.36)	0.00020 (5.59)	-0.00011 (-1.18)
Parents' longevity	0.7738 (0.42)	0.03850 (0.53)	1.12900 (1.86)	0.47690 (1.15)	0.04158 (0.44)	0.08766 (3.65)	0.92900 (1.75)
Blue collar	0.5000 (0.50)	0.04284 (0.64)	-0.44440 (-1.16)	-0.11510 (-0.34)	0.00494 (0.05)	-0.02944 (-0.14)	1.11200 (2.68)
Industry	0.6373 (0.48)	-0.02043 (-0.31)	0.84050 (2.06)	0.39610 (1.18)	0.00339 (0.04)	-0.11070 (-0.52)	0.14870 (0.38)
Schooling	10.31 (3.27)	-0.03276 (-3.33)	-0.03901 (-0.67)	-0.05084 (-1.00)	0.01789 (1.36)	0.01242 (0.41)	0.05533 (0.99)
Married, spouse present	0.8888 (0.31)	0.08684 (0.67)	0.12660 (0.17)	0.47470 (0.66)	0.36080 (2.20)	-0.11130 (-0.38)	0.69570 (0.95)
Unmarried, living with others	0.0399 (0.20)	0.08096 (0.42)	0.15190 (0.12)	0.23950 (0.19)	0.25360 (1.00)	0.08330 (0.18)	-0.02576 (-0.00)
Retirement status	0.6430 (0.48)	-1.52300 (-24.08)	9.61100 (0.29)	9.69700 (0.33)	-1.47900 (-17.42)	9.14700 (0.30)	9.57100 (0.19)
Constant	-	-4.82000 (-10.28)	-22.15000 (-0.66)	-20.08000 (-0.67)	-2.03200 (-3.36)	-17.31000 (-0.56)	-17.62000 (-0.35)
-2 ln likelihood	-	689.18	44.05	48.52	724.52	61.73	27.53
Events	-	1161	35	47	667	113	39

Table A.4 Determinants of ln Incidence Rates in Retirement Model, 1971-1981: Black Men

		Estimated coefficients (asymptotic t-ratios)					
Determinant	Means (Standard deviations)	Functional to disabled	Functional to death	Functional to follow-up loss	Disabled to functional	Disabled to death	Disabled to follow-up loss
Age	52.24 (3.72)	0.07158 (5.36)	0.43140 (3.62)	0.87120 (0.08)	0.03576 (1.96)	0.09470 (2.64)	-0.19480 (-1.68)
Impairment	3065 (1801)	0.00006 (1.54)	0.00012 (0.71)	-0.01051 (-0.14)	-0.00042 (-7.45)	0.00005 (0.95)	0.00001 (0.06)
Parents' longevity	0.8209 (0.38)	0.14440 (1.20)	-0.00426 (-0.00)	-10.84000 (-0.18)	0.15820 (0.95)	0.48080 (1.25)	-0.57300 (-0.61)
Blue collar	0.6652 (0.47)	-0.19980 (-1.93)	0.34610 (0.48)	-3.97500 (-0.03)	0.18910 (1.28)	0.07503 (0.29)	1.66800 (1.44)
Industry	0.7070 (0.46)	0.30710 (2.76)	0.62470 (0.81)	0.16020 (0.00)	-0.13390 (-0.84)	-0.48070 (-1.76)	-2.16200 (-2.39)
Schooling	6.774 (3.77)	-0.02370 (-1.85)	-0.06768 (-0.80)	0.61090 (0.04)	0.01109 (0.62)	0.03273 (0.95)	0.00895 (0.08)
Married, spouse present	0.7296 (0.44)	0.09239 (0.77)	-0.62940 (-0.99)	3.43200 (0.03)	-0.04141 (-0.25)	-0.22090 (-0.76)	9.14400 (0.09)
Unmarried, living with others	0.0887 (0.28)	0.36840 (1.95)	-9.18000 (-0.00)	5.68500 (0.03)	-0.14860 (-0.60)	-0.45950 (-0.81)	9.00100 (0.09)
Retirement status	0.6017 (0.49)	-1.26400 (-12.40)	9.19000 (0.23)	7.72600 (0.10)	-1.39200 (-9.91)	9.22500 (0.23)	9.59500 (0.08)
Constant	-	-5.01600 (-6.69)	-37.44000 (0.91)	-53.30300 (0.08)	-1.86600 (-1.85)	-18.14000 (-0.45)	-14.15000 (-0.09)
-2 ln likelihood	-	220.94	39.88	11.94	265.07	32.55	14.85
Events	-	487	13	1	256	67	6

Table A.5 Determinants of ln Incidence Rates in Human Capital Model, 1971-1981: White Wage and Salary Earners

Determinant	Means (Standard deviations)	Estimated coefficients (asymptotic t-ratios) Functional to disabled	Functional to death	Functional to follow-up loss	Disabled to functional	Disabled to death	Disabled to follow-up loss
Age	51.48 (4.25)	0.04599 (6.63)	0.06286 (2.51)	0.05917 (2.77)	-0.02622 (-3.02)	0.05768 (3.50)	-0.01845 (-0.68)
Impairment	2849 (1498)	0.00011 (5.08)	0.00020 (3.42)	0.00016 (2.71)	-0.00058 (-15.80)	0.00005 (1.55)	-0.00018 (-2.45)
Parents' longevity	0.7674 (0.42)	0.13830 (2.00)	-0.15960 (-0.69)	0.02599 (0.13)	-0.03075 (-0.03)	-0.02733 (-0.16)	0.25550 (0.86)
Blue collar	0.5583 (0.50)	0.11150 (1.62)	-0.30850 (-1.30)	0.25780 (1.18)	-0.07831 (-0.89)	-0.21040 (1.35)	0.27910 (0.99)
Industry	0.6386 (0.48)	-0.00014 (-0.00)	0.62220 (2.47)	0.02370 (0.11)	-0.05700 (-0.68)	0.02833 (0.18)	0.25640 (0.92)
Schooling	10.45 (3.33)	-0.03207 (-3.04)	0.00288 (0.08)	-0.01503 (-0.46)	0.00859 (0.63)	-0.02418 (-1.00)	0.03348 (0.79)
Wage	346.7 (18.56)	-0.00044 (-2.32)	-0.00186 (-2.28)	-0.00002 (-0.03)	0.00021 (1.08)	-0.00099 (-1.83)	-0.00038 (-0.47)
Marital status	0.9364 (0.24)	0.07646 (0.63)	-0.28270 (-0.75)	0.11160 (0.28)	0.06944 (0.45)	-0.06602 (-0.27)	0.38610 (0.74)
Job satisfaction	0.9220 (0.27)	-0.14490 (-1.36)	0.34240 (0.74)	-0.00150 (0.00)	-0.10760 (-0.82)	0.07622 (0.31)	-0.63150 (-2.00)
Constant	-	-4.28200 (-10.34)	-7.95100 (-5.31)	-7.84400 (-6.08)	1.01900 (1.90)	-5.93000 (-5.75)	-3.31400 (-1.97)
-2 ln likelihood	-	135.77	29.18	18.54	424.58	27.70	15.51
Events	-	1244	95	130	757	217	80

Table A.6 Determinants of ln Incidence Rates in Human Capital Model, 1971-1981: Black Wage and Salary Earners

		Estimated coefficients (asymptotic t-ratios)					
Determinant	Means (Standard deviations)	Functional to disabled	Functional to death	Functional to follow-up loss	Disabled to functional	Disabled to death	Disabled to follow-up loss
Age	51.65 (4.08)	0.05550 (5.33)	0.12630 (4.04)	-0.00385 (-0.07)	-0.01664 (-1.24)	0.04397 (1.93)	-0.04574 (-0.73)
Impairment	2954 (1757)	0.00008 (2.62)	0.00022 (3.77)	-0.00044 (-1.28)	-0.00050 (-10.62)	0.00002 (0.58)	-0.00008 (-0.65)
Parents' longevity	0.8171 (0.39)	0.03528 (0.33)	-0.37480 (-1.29)	-0.58440 (-1.34)	0.02963 (0.21)	0.28110 (1.07)	-0.66580 (-1.20)
Blue collar	0.7231 (0.45)	-0.17570 (-1.72)	0.09863 (0.33)	-0.06653 (-0.13)	0.15930 (1.16)	-0.00272 (-0.00)	0.42400 (0.73)
Industry	0.6896 (0.46)	0.34250 (3.46)	-0.19210 (-0.69)	0.48480 (0.98)	-0.11800 (-0.86)	-0.33110 (-1.56)	-1.93300 (-3.38)
Schooling	7.146 (3.78)	-0.02602 (-2.23)	0.01473 (0.42)	0.03359 (0.57)	0.00933 (0.56)	0.02988 (1.11)	-0.04031 (-0.53)
Wage	227.6 (97.78)	-0.00068 (-1.48)	-0.00189 (-1.26)	0.00116 (0.57)	0.00089 (1.53)	0.00045 (0.46)	0.00243 (0.92)
Marital status	0.8480 (0.36)	-0.10720 (-0.95)	-0.20420 (-0.63)	-0.35210 (-0.70)	-0.08571 (-0.56)	-0.33770 (-1.48)	-0.43090 (-0.66)
Job satisfaction	0.9350 (0.25)	-0.32410 (-2.01)	-0.71080 (-1.64)	9.74900 (0.08)	0.13330 (0.57)	-0.71750 (-2.79)	0.16790 (0.16)
Constant	-	-4.18800 (-6.92)	-9.60300 (-5.33)	-1.35900 (-0.11)	0.03368 (0.04)	-4.84900 (-3.63)	-1.19700 (-0.33)
-2 ln likelihood	-	72.27	36.53	9.65	194.17	19.34	15.33
Events	-	596	65	25	349	131	17

Table A.7 Determinants of ln Incidence Rates in Demographic Model, 1971-1981: White and Black Men

		Estimated coefficients (asymptotic t-ratios)					
Determinant	Means (Standard deviations)	Functional to disabled	Functional to death	Functional to follow-up loss	Disabled to functional	Disabled to death	Disabled to follow-up loss
Age	51.72	0.05450	0.09088	0.02650	-0.02628	0.05425	-0.01567
	(4.23)	(10.99)	(5.26)	(1.53)	(-4.22)	(5.04)	(-0.77)
Impairment	2936	0.00007	0.00021	0.00005	-0.00059	0.00002	-0.00021
	(1626)	(4.77)	(6.06)	(0.75)	(-23.77)	(0.89)	(-3.70)
Parents' longevity	0.7788	0.08618	-0.19960	0.01212	0.00105	0.17510	0.11080
	(0.42)	(1.71)	(-1.19)	(0.07)	(0.00)	(1.51)	(0.51)
Race	0.2838	0.09060	0.41750	-0.53660	0.11300	0.22860	-.57550
	(0.45)	(1.86)	(2.56)	(-2.55)	(1.80)	(2.30)	(-2.43)
Marital status	0.8943	-0.02107	-0.34940	-0.13980	0.09770	-0.28520	-0.02051
	(0.31)	(-0.31)	(-1.68)	(-0.56)	(1.10)	(-2.33)	(-0.07)
Duncan index	31.37	-0.00895	-0.00875	-0.00008	0.00259	-0.00117	0.00229
	(23.27)	(-9.35)	(-2.55)	(-0.03)	(2.07)	(-0.50)	(0.56)
Geographic immobility	0.2450	0.00696	-0.07119	-0.20230	-0.09591	-0.18060	0.05885
	(0.43)	(0.14)	(-0.41)	(-1.10)	(-1.53)	(-1.72)	(0.30)
Foreign born	0.0441	0.11120	-0.26500	0.55410	0.17340	-0.14550	-0.05175
	(0.21)	(1.10)	(-0.68)	(2.23)	(1.37)	(-0.55)	(-0.11)
Constant	-	-4.65400	-9.00800	-5.64200	0.88070	-6.09500	-3.03400
		(-17.34)	(-9.66)	(-6.10)	(2.58)	(-10.06)	(-2.70)
-2 ln likelihood	-	297.73	85.84	19.50	954.29	50.83	29.12
Events	-	2395	196	197	1461	515	134

Table A.8 Determinants of ln Incidence Rates in Demographic Model, 1971-1981: White Men

		Estimated coefficients (asymptotic t-ratios)					
Determinant	Means (Standard deviations)	Functional to disabled	Functional to death	Functional to follow-up loss	Disabled to functional	Disabled to death	Disabled to follow-up loss
Age	51.65	0.05219	0.08048	0.03753	-0.02695	0.04798	-0.01712
	(4.26)	(8.86)	(3.70)	(2.01)	(-3.69)	(3.64)	(-0.76)
Impairment	2865	0.00007	0.00021	0.00009	-0.00063	0.00005	-0.00021
	(1515)	(3.88)	(4.65)	(1.61)	(-19.93)	(1.84)	(-3.24)
Parents' longevity	0.7635	0.09388	-0.10550	0.09367	-0.02174	0.08078	0.27980
	(0.43)	(1.60)	(-0.50)	(0.51)	(-0.30)	(0.59)	(1.13)
Marital status	0.9183	0.00629	-0.14760	0.06069	0.09045	-0.12850	0.37600
	(0.27)	(0.07)	(-0.46)	(0.19)	(0.78)	(-0.72)	(0.96)
Duncan index	36.55	-0.00909	-0.00958	-0.00182	0.00302	-0.00190	0.00039
	(23.79)	(-8.75)	(-2.48)	(-0.58)	(2.22)	(-0.73)	(0.09)
Geographic immobility	0.2413	-0.03749	0.10890	-0.21640	-0.01614	-0.29630	0.11150
	(0.43)	(-0.65)	(0.52)	(-1.08)	(-0.22)	(-2.12)	(0.51)
Foreign born	0.0593	-0.12890	-0.16090	0.48620	0.18150	-0.24580	-0.02757
	(0.24)	(-1.25)	(-0.41)	(1.90)	(1.39)	(-0.86)	(-0.06)
Constant	-	-4.55000	-8.73800	-6.49100	1.00300	-5.90000	-3.41000
		(-14.26)	(-7.40)	(-6.43)	(2.50)	(-7.97)	(-2.71)
-2 ln likelihood	-	187.10	36.41	13.40	676.32	25.20	16.45
Events	-	1687	122	167	1046	326	110

Table A.9 Determinants of ln Incidence Rates in Demographic Model, 1971-1981: Black Men

		Estimated coefficients (asymptotic t-ratios)					
Determinant	Means (Standard deviations)	Functional to disabled	Functional to death	Functional to follow-up loss	Disabled to functional	Disabled to death	Disabled to follow-up loss
Age	51.89	0.06064	0.10980	-0.01922	-0.02438	0.06752	-0.00916
	(4.14)	(6.52)	(3.83)	(-0.41)	(-2.03)	(3.58)	(-0.18)
Impairment	3117	0.00007	0.00021	-0.00054	-0.00053	-0.00002	-0.00020
	(1865)	(2.69)	(3.78)	(-1.62)	(-13.04)	(-0.66)	(-1.72)
Parents' longevity	0.8174	0.07074	-0.37560	-0.54310	0.05264	0.39560	-0.57380
	(0.39)	(0.71)	(-1.38)	(-1.34)	(0.41)	(1.81)	(-1.27)
Marital	0.8336	-0.06533	-0.49140	-0.63470	0.09559	-0.45380	-0.75750
	(0.37)	(-0.63)	(-1.78)	(-1.46)	(0.69)	(-2.65)	(-1.67)
Duncan index	18.32	-0.00864	-0.00348	0.01044	-0.00000[a]	0.00173	0.01660
	(15.55)	(-3.38)	(-0.45)	(1.16)	(-0.00)	(0.33)	(1.39)
Geographic immobility	0.2546	0.11870	-0.43710	-0.14170	-0.29770	-0.01680	-0.17670
	(0.44)	(1.36)	(-1.33)	(-0.31)	(-2.52)	(-0.10)	(-0.37)
Foreign born	0.0057	0.09235	-9.73400	1.86400	0.32990	0.72660	-9.90500
	(0.08)	(0.18)	(-0.04)	(1.69)	(0.56)	(1.00)	(-0.03)
Constant	-	-4.85800	-9.35200	-2.02800	0.76860	-6.55800	-3.10400
		(-9.69)	(-6.00)	(-0.83)	(1.18)	(-6.16)	(-1.12)
-2 ln likelihood	-	75.06	36.33	12.87	285.01	25.69	10.22
Events	-	708	74	30	415	189	24

[a] Less than 0.000005.

Table A.10 Determinants of ln Incidence Rates in Demographic Model, 1971-1981: White and Black Men Age 55-59 in 1971 and 1976

Determinant	Means (Standard deviations)	Estimated coefficients (asymptotic t-ratios)					
		Functional to disabled	Functional to death	Functional to follow-up loss	Disabled to functional	Disabled to death	Disabled to follow-up loss
Impairment	2872 (1579)	0.00011 (4.42)	0.00029 (5.34)	-0.00009 (-0.69)	-0.00066 (-14.93)	-0.00010 (-2.24)	-0.00018 (-2.06)
Parents' longevity	0.7556 (0.43)	0.17870 (2.24)	-0.23290 (-0.87)	-0.20590 (-0.89)	0.10280 (0.95)	-0.23870 (-1.28)	-0.12590 (-0.40)
Race	0.2761 (0.45)	0.06941 (0.89)	0.36340 (1.37)	-0.19320 (-0.68)	-0.01892 (-0.18)	0.18580 (1.03)	-0.09254 (-0.27)
Marital status	0.8963 (0.31)	-0.14800 (-1.35)	-0.60710 (-1.83)	-0.51080 (-1.56)	0.09704 (0.64)	-0.49530 (-2.38)	0.08809 (0.18)
Duncan index	31.80 (23.35)	-0.00864 (-5.41)	-0.00944 (-1.55)	0.00159 (0.35)	0.00330 (1.59)	0.00059 (0.14)	0.00770 (1.23)
Geographic immobility	.2514 (0.43)	0.01474 (0.19)	0.09828 (0.36)	-0.50690 (-1.71)	-0.01659 (-0.16)	0.06549 (0.36)	-0.13150 (-0.39)
Foreign born	0.0389 (0.19)	-0.15230 (-.84)	-0.88370 (-0.87)	0.58740 (1.54)	0.09928 (0.45)	0.74440 (2.11)	0.17440 (0.24)
1971 cohort	0.5542 (0.50)	-0.12780 (-1.91)	0.12470 (0.51)	-0.00127 (-0.00)	0.13270 (1.47)	0.42930 (2.55)	-0.16230 (-0.57)
Constant	-	-1.90700 (-12.34)	-4.46000 (-9.08)	-3.46100 (-6.75)	-0.42230 (-1.83)	-2.72400 (-7.96)	-3.86800 (-5.78)
-2 ln likelihood	-	77.83	32.50	10.67	369.56	25.45	9.42
Events	-	922	72	90	518	157	53

Table A.11 Determinants of ln Incidence Rates in Demographic Model, 1971-1981: White and Black Men Age 60-64 in 1971 and 1976

		Estimated coefficients (asymptotic t-ratios)					
Determinant	Means (Standard deviations)	Functional to disabled	Functional to death	Functional to follow-up loss	Disabled to functional	Disabled to death	Disabled to follow-up loss
Impairment	3130	0.00007	0.00025	0.00005	-0.00063	0.00006	-0.00025
	(1827)	(2.65)	(4.56)	(0.40)	(-14.37)	(2.08)	(-2.69)
Parents' longevity	0.8179	0.09913	0.11790	0.18720	-0.16600	0.30910	1.08300
	(0.39)	(1.07)	(0.37)	(0.56)	(-1.50)	(1.52)	(2.08)
Race	0.2996	0.12930	0.14140	-0.94530	0.22500	0.20000	-0.93350
	(0.46)	(1.58)	(0.49)	(-2.24)	(2.09)	(1.28)	(-2.44)
Marital status	0.8845	-0.00311	0.12230	1.02400	0.13760	-0.08508	-0.12160
	(0.32)	(-0.03)	(0.30)	(1.41)	(0.96)	(-0.42)	(-0.30)
Duncan index	30.33	-0.01067	-0.00694	-0.00312	0.00307	-0.00205	-0.00759
	(23.15)	(-6.46)	(-1.26)	(-0.59)	(1.39)	(-0.52)	(-1.04)
Geographic immobility	0.2416	-0.00954	-0.31210	-0.00453	-0.09643	-0.17120	0.34570
	(0.43)	(-0.12)	(-0.99)	(-0.00)	(-0.88)	(-1.03)	(1.18)
Foreign born	0.0493	-0.02223	0.27520	0.61310	0.19550	-0.62700	-0.19390
	(0.22)	(-0.14)	(0.58)	(1.57)	(0.95)	(-1.23)	(-0.26)
1971 cohort	0.4972	-0.15130	-0.15110	-0.08670	0.01084	-0.02778	0.22150
	(0.50)	(-2.17)	(-0.63)	(-0.35)	(0.12)	(-0.20)	(0.81)
Constant	-	-1.53000	-4.68800	-5.19700	-0.44280	-3.64000	-4.29200
		(-9.33)	(-8.45)	(-6.15)	(-2.03)	(-11.13)	(-5.87)
-2 ln likelihood	-	85.71	20.01	14.07	346.26	14.62	23.44
Events	-	834	70	64	492	204	54

The Center has also been active in manpower planning both in the U.S. and in the developing countries. A project for the Ohio Advisory Council for Vocational Education identified the highly fragmented institutions and agencies which supply vocational and technical training in Ohio. Subsequent projects for the Ohio Occupational Information Coordinating Committee have followed graduates of these programs. These data and information on occupational distributions of employers collected for the Occupational Employment Statistics Program are being integrated into a comprehensive planning model which will be accessible to trainees and employers and linked to a national network.

Another focus of the Center's research is industrial relations and collective bargaining. In a project for the U.S. Department of Labor, staff members are working with unions and management in a variety of industries to evaluate several current experiments for expedited grievance procedures. The procedural adequacies, safeguards for due process, and cost and timing of the new procedure are being weighed against traditional arbitration techniques.

Senior staff also serve as consultants to many boards and commissions at the national and state level. Recently the Center's staff have produced papers and prepared testimony for the Department of Labor, the Vice President's Task Force on Youth Unemployment, the Joint Economic Committee of Congress, the National Commission for Employment and Unemployment Statistics, the National Commission for Employment Policy, the White House Conference on the Family, the Ohio Department of Corrections, the Ohio Board of Regents, the Ohio Governor's Task Force on Health, and the Ohio Governor's Task Force on Welfare.

The Center maintains a working library of approximately 10,000 titles, including a wide range of reference works and current periodicals, as well as an extensive microfilm and microfiche collection. Through their facilities linked to the University computer, the Center's data processing staff provide statistical, technical, and programming support both for in-house researchers and the over 250 users of the National Longitudinal Surveys data tapes. They maintain the NLS tapes, data base, documentation, and associated software.

For information on specific Center activities, write: Director, Center for Human Resource Research, 5701 North High Street, Worthington, Ohio 43085.

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The Ohio State University

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Center for Human Resource Research

The Center for Human Resource Research is a policy-oriented multidisciplinary research organization affiliated with The Ohio State University. Established in 1965, the Center is concerned with a wide range of contemporary problems related to developing and conserving human resources. Its more than thirty senior staff members come from disciplines including economics, education, English, health sciences, industrial relations, management science, psychology, public administration, social work, and sociology. This multidisciplinary team is supported by approximately 70 graduate research associates, full-time research assistants, computer programmers, and other personnel.

The Center has become preeminent in the fields of labor market research and manpower planning. With continuing support from the United States Department of Labor, the Center has been responsible since 1965 for the National Longitudinal Surveys of Labor Market Experience. Staff have assisted in population and human resource planning throughout the world, having conducted major studies in Bolivia, Ecuador, Kenya, Sierra Leone, Venezuela, and Zaire. At the request of the National Science Foundation, a review of the state of the art in human resource planning was conducted. Other studies have assessed the impact of labor and education policy on labor supply and evaluated employment statistics collection methods. Senior personnel are also engaged in several other areas of research—collective bargaining and labor relations, evaluation and monitoring of the operation of government employment and training programs, and the projection of health education and facility needs.

The Center for Human Resource Research has received over two million dollars annually from government agencies and private foundations to support its research in recent years. Providing support have been the U.S. Departments of Labor, State, Defense, Education, Health and Human Services; Ohio's Health and Education Departments and Bureau of Employment Services; the Ohio cities of Columbus and Springfield; the Ohio AFL-CIO; the George Gund Foundation; the Rockefeller Foundation; and the Ford Foundation. The breadth of the Center's research interests is best illustrated by a brief review of a few of its current projects.

The Center's largest project is the National Longitudinal Surveys of Labor Market Experience. This project has involved repeated interviews over a fifteen-year period with four groups of the United States population: older men, middle-aged women, and young men and women. The data are collected for 20,000 individuals by the U.S. Bureau of the Census, and the center is responsible for data analysis. Since 1979, the NLS has followed an additional cohort of 13,000 young men and women between the ages of 14 and 21. This cohort includes for the first time those serving in the armed forces at the time of the initial interview. In addition to being the definitive U.S. national data set on the labor market activities of young adults, this continuing survey includes unique batteries of questions on such socially important issues as delinquency, alcohol and drug use, fertility, and prenatal care. For this cohort, field work is handled by the National Opinion Research Center. To date the Center's staff have prepared dozens of research monographs, special reports, and books on the NLS, and they also prepare and distribute data tapes for public use.

The Quality of Work Life Project, another ongoing study, began in 1975 as an attempt to improve the productivity and the meaningfulness of work for public employees in the cities of Springfield and Columbus. Center staff also served as third party advisers and researchers exploring new techniques for attainment of management-worker cooperation and worker health in a number of central Ohio private sector industries.

(Continued on inside back cover)

Center for Human Resource Research

The Ohio State University

The Demographics of Alcohol Use Among Young Americans:

Results from the 1983 National Longitudinal Survey of Labor Market Experience of Youth

by

Joan E. Crowley

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Center for Human Resource Research

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THE DEMOGRAPHICS OF ALCOHOL USE AMONG YOUNG AMERICANS:
Results from the 1983 National Longitudinal Survey of Labor Market Experience of Youth

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INTRODUCTION

While there is a great deal of research literature available on alcoholism and alcoholics, research on the drinking patterns of the general population is quite scarce. The National Longitudinal Survey of Labor Market of Youth (NLS) provides access to a nationally representative sample of over 12,000 people in the age period when they are leaving adolescence and entering adulthood. The addition of alcohol use questions to the NLS survey provides a unique opportunity to study the development of drinking patterns during a critical life stage.

Alcohol consumption measures were first included on the NLS survey in 1982, when the panel ranged in age from 17 to 24. The 1982 instrument included questions about the age of onset of drinking, a few questions about patterns of drinking in the previous 30 days plus detailed questions about drinking in the past week. The set of items was expanded in 1983 to include detailed information on drinking patterns in the past month. Both sets of questions are listed in Appendix A.

Drinking patterns in the 1982 instrument were described in a previous report. This report will focus on three issues: an assessment of the consistency of responses between 1982 and 1983; a description of the demographics of drinking patterns using indices developed from the 1983 data; and a description of the occupational patterns of drinking among young people.

YOUTH AND ALCOHOL

One major advantage of the NLS for studying alcohol use is its large, nationally representative sampling frame that is supplemented by additional samples of blacks, Hispanics, and economically disadvantaged non-black non-Hispanic youth. While many studies have been done on alcohol consumption patterns among college and high school students, relatively little is known about the non-student population. The NLS allows detailed comparisons of the entire range of educational levels.

Most American youth drink, at least occasionally (Rachal, et al., 1975). Alcohol consumption is sanctioned by social norms. It is also the source of a major, and costly, health and social problem when alcohol use becomes alcohol abuse or alcoholism (Institute of Medicine, 1980). These costs may increase, since consumption levels are rising generally (Smart and Murray, 1981). Most theories of alcohol and drug use focus on internal psychological or psychosocial factors which provide the context for drinking, factors which are not available on the NLS interview.[1] What the NLS can provide is a broad demographic description of alcohol use patterns, plus an investigation of the linkage between drinking patterns and the timing of major life roles--education and school-leaving, family formation and disruption, employment and unemployment.

VALIDITY: INTERNAL CONSISTENCY OF RESPONSES

One major issue in the use of self-report measures of behavior is the accuracy of responses. Several of the questions on the NLS lend themselves to use for assessing the quality of the data.

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[1] C.f. Kandel, 1980; Jessor and Jessor, 1977; Radesovich, et al., 1980.

Both in 1982 and 1983, respondents were asked if they had ever had a drink, if they had ever had a problem at school caused by drinking, and if they had ever had a problem at work caused by drinking. Each question allowed only a yes or no answer. Logically, people who reported drinking or having a problem due to drinking in 1982 should report the same information in 1983. If drinking or problems admitted in 1982 are denied in 1983, one of the reports must be in error.

A discussion of sources of error may facilitate interpretation of the consistency tables. Interviewer or coding errors should be random and quite rare, given that there are no subjective interviewer or coder judgments involved with the classification. Self presentation concerns may produce distortions in reported behavior if the respondent tries to appear "cool" to the interviewer by admitting to drinking which has never occurred or by suppressing reports of drinking to avoid disapproval. Deliberate distortion of drinking behavior should lead to either consistent denial or, if respondents felt more comfortable discussing the topic the second time than they felt on the first, greater disclosure in 1983 than in 1982.

The patterns of drinking shown below and as reported in other research on general populations shows that both drinking and abstaining are common, and thus unlikely to be considered stigmatizing. Previous studies indicate more apparent concealment among heavier drinkers, but fairly good validity overall (Radosevich, et al., 1979). Moreover, these questions arise in the fourth and fifth waves, respectively, of a panel study in which respondents are interviewed annually, often by the same interviewer each year. Motivation to distort responses should be fairly small.

The major expected source of response bias is memory. For youth who drink (or have drunk in the past) on any sort of regular basis, there is no

Table 1. Crosstabulation of Ever Drank 1982 By Ever Drank 1983

		EVER DRANK, 1983		
	NO	YES	%	N
Ever Drank, 1982				
No	56.6	43.4	6.0	968
Yes	1.4	98.6	94.0	10976
N	770	11174		11944
Column Total	4.7	95.3	100.0	

issue about remembering whether alcohol has ever been consumed. There are recent and/or salient episodes to remember. For abstainers, however, there may be simple failures to remember a past episode in which alcohol was consumed, especially if the event was in the relatively distant past. Similarly, the questions refering to problems at school or work ask if there has been a problem ever. Memory errors are more likely the longer the period covered.

A further source of bias stems from the lack of a specific definition of "drink of alcohol" or "problem" at school or work. Some discrepancies may be due to shifts in the interpretation of the question from one year to the next. The interpretation of results is also made more complex by the extremely skewed distribution to the answers to these questions. For all three variables, the larger of the two categories contains over nine tenths of the sample, each year. Drinking is widespread, but reports of problems due to drinking are uncommon. The estimates of abstainers and drinking problems are thus based on a small number of respondents, leading to greater expected instability.

Tables 1 through 3 show the appropriate cross-tabulations. As with all tables to be presented in this report, computations are done using weights to compensate for oversampling. The N's and tests of statistical significance, however, are based on unweighted data. Table 1 presents the number of youth who report ever having had an alcoholic beverage.

The vast majority of youth report having at least tried alcohol. To address the question of consistency, less than two percent of youth who reported having had a drink by the time of the 1982 interview deny ever drinking in 1983. Stated another way, of those who deny drinking in 1983, twenty percent had admitted drinking prior to the 1982 interview. Over two fifths of the youth who reported never having had a drink in 1982 report having consumed

Table 2. Crosstabulation of Drinking Ever Caused Problems at School 1982 By Drinking Ever Caused Problems at School 1983

	Drinking Ever Caused Problems at School, 1983			
Drinking Ever Caused Problems at School 1982	NO	YES	%	N
No	96.1	3.9	96.8	10303
Yes	49.9	50.1	3.2	327
N	10127	503		10630
Column Total	94.6	5.4	100.0	

Table 3. Crosstabulation of Drinking Ever Caused Problems at Work 1982 By Drinking Ever Caused Problems at Work 1983

	Drinking Ever Caused Problems At Work, 1983			
Drinking Ever Caused Problems At Work, 1982	NO	YES	%	N
No	96.9	3.1	97.5	10356
Yes	63.9	36.1	2.5	261
N	10214	403		10617
Column Total	96.1	3.9		100.0

alcohol by 1983. Some of these youth probably tried alcohol for the first time in the intervening year, but the results for the 1982 drinkers suggests that a substantial part of the apparent shift is due to differential recollection between the years.

As noted, twenty percent of youth who denied ever having had alcohol in 1983 had already stated in 1982 that they had had a drink. Assuming that these youth had no special reason to distort their answers (a tenable hypothesis given that they had already disclosed drinking behavior once before), it is plausible that most of this twenty percent can be attributed to memory-based response error. If we estimate that about one fifth of those who report never having had alcohol are in error due to forgetting, it follows that about one half of the respondents who switched from "never had a drink" in 1982 to "ever had a drink" in 1983 should be due to memory error. Presumably, the remaining youth had actually had their first drink in the intervening year.

Tables 2 and 3 show much the same pattern. The vast majority of youth deny ever having had problems in school or at work due to drinking, and most deny problems consistently. However, among those who admit a school problem one year, only about half are consistent over time, and among those who admit a problem at work in 1982, only a third report a problem on the next interview.

Many studies look at the age of onset of drinking as a measure of alcohol consumption. Both the 1982 and 1983 interviews ask youth to report how old they were when they started drinking. In 1983, the question included a further specification, defining drinking as once or twice a week. In 1982, the probe was added only if the respondent asked for clarification. Without the specification, it would be logical for respondents to report their first taste of alcohol, whether or not this coincided with regular alcohol use. Thus, we expect that the age of onset reported in 1982 should be equal to or younger than the age reported in 1983.

Table 4 shows the comparison of the two reports, categorized by whether the two reports matched within one year (allowing for "rounding" error on the part of the respondent), were logically consistent, with the age reported in 1983 older than the age reported in 1982, or logically inconsistent, with the age reported in 1983 younger than the supposedly less restricted 1982 report. The distribution is broken down further by the age of onset reported in 1982. As expected, for most respondents the 1983 age of onset was equal to or older than the 1982 age. Overall, only four percent of the responses are inconsistent. On average, youth reporting a very young age of onset in 1982 reported in 1983 that they started drinking regularly six years later. The number of exact matches is quite small for youth reporting 1982 age of onset under the 16 years. The proportion of inconsistent responses increases with initial reported age of onset, until, at the very oldest age range, most of the 1983 responses are inconsistent. It is not clear why those who started drinking at later ages (and, by the distribution of ages in the sample, those who started drinking recently) are more likely to respond in this way, however, the number of respondents in these categories is very small.

In summary, most youth have at least tried alcohol, but very few report that drinking has ever caused them a problem at school or at work. However, reports are not completely consistent over time among those denying drinking or reporting problems. Several reasons have been advanced for the lack of consistency in these groups. Most notably, the questions require review of the entire life span, a considerable feat of memory.

Table 4. Consistency of Age Started Drinking 1982-1983 By Age Started Drinking 1982

Consistency 1982-1983
(Row Percent Distributions)

Age Started Drinking, 1982	Match	Inconsistent	Consistent	Mean Difference, 1982-1983	Row Total
1-12	10.7	.8	88.5	253	6.00 3.9
13-14	24.3	1.4	74.4	703	2.71 11.6
15-16	35.2	1.5	63.4	2150	1.94 36.1
17	67.4	2.8	29.8	1156	1.13 18.1
18	67.5	3.0	29.5	1336	.90 22.1
19	65.3	8.2	26.5	335	.33 4.3
20	59.2	18.1	22.7	151	.32 2.0
21	64.9	18.5	16.6	99	-.14 1.4
22-25	32.9	50.9	16.2	32	-1.23 .3
N	3014	221	2980	6215	6215
Column Total	48.1	3.0	48.8	100.0	

Chi-Square=1250.775 DF=16 P=.000

Difference scores calculated only for respondents who reported an age of onset for both 1982 and 1983.

For those who reported never having started in 1982, the mean age reported in 1983 was 18.10.

While the reports of alcohol use are not perfectly reliable, they do show considerable consistency. Most of the measures to be reported below refer to alcohol consumption within a fairly short, defined period--the 30 days prior to the interview date. Memory problems should be less of a problem under such circumstances. Previous work on self-reports of alcohol and drug use show that, although there is some concealment among the very heavy users, the data resulting from self-reports is adequate for most research purposes (Radosevich, 1979).

CONSISTENCY OF ALCOHOL USE, 1982-1983

Tables 5 and 6 give a brief summary of the consistency of drinking reports between 1982 and 1983. These tables focus on drinking patterns within the past seven days, since the questions were repeated both years.

The correlations between the quantities and frequency of alcohol consumption across years are shown in Table 5. The first column of correlations is for the total sample, the second column is restricted to youth who drank at least once in the past week, each year. In general, the correlations are moderate, although quite significant. There is a great deal of variation from one year to the next in the frequency and quantity consumed.

Since drunkeness is seen as a more serious problem than light drinking, several questions on the interview are focussed on identifying youth who drink heavily. Each year, the interview includes a question concerning the number of times the youth drank six or more drinks on one occasion in the past 30 days. In 1983, a similar question concerning the number of times six or more drinks were consumed on one day was embedded in detailed probes of drinking during the past month. Note that one day may include more than one occasion of drinking, so the questions are not completely redundant. The correlation

Table 5. Correlations between Selected Drinking Variables, 1982-1983

Variable 1	Variable 2	Correlation, Total Sample	Correlation, Drinkers Only
Number of drinks last week, 1982	Number of drinks last week, 1983	.50 (11895)	.45 (4426)
Number of days drank in last week, 1982	Number of days drank in last week, 1983	.55 (11936)	.43 (4477)
Number of times drank 6 or more drinks on one occasion in last month, 1982	Number of times drank 6 or more drinks on one occasion in last month, 1983	.56 (6536)	.42 (3207)
Number of times drank 6 or more drinks on one occasion in last month, 1982	Number of times drank 6 or more drinks in last month, 1983	.43 (6537)	.37 (2248)
Number of times drank 6 or more drinks on one occasion in last month, 1983	Number of days drank 6 or more drinks in last month, 1983	.71 (8047)	.75 (3091)

Correlations are based on weighted data.
N-sizes are in parentheses and are unweighted.

between the two items for the total sample, is .71, indicating that, despite the apparent equivalency of the two questions, a number of respondents give different responses to each. The correlations between reports of heavy drinking in 1982 and 1983 are the same order of magnitude as the correlations between overall quantities and frequencies of drinking across the years. This suggests that heavy drinking is no more likely to persist over time than are more moderate levels of consumption.

Youth who drank within the past week were asked to estimate separately how many drinks of beer, wine, and liquor they had consumed during that period. Table 6 shows the patterns of beverage choice for 1983 by beverage choice for 1982 among youth who reported drinking in both years.

Most drinking youth drink beer. Over 80 percent reported drinking beer, and half of these drank beer exclusively. Wine is the least frequently reported beverage of choice. The most common combination of beverages by far is beer and liquor, with about a quarter of the sample reporting this mix. The marginal distribution of beverage choice is quite similar for the two years. However, the full table shows that these choices are not terribly stable, except for the "pure" beer drinkers. The cells on the diagonal of the table indicate the youth who made the same selection of beverages in both years. Except for the beer only group, all of the marginals are well below 50%, indicating that more youth in each category change than repeat their beverage choices. However, these changes do not appear to be entirely random. Youth who were wine drinkers in 1982 are less likely than other youth to report drinking beer in 1983. When 1982 beer drinkers may change their patterns, they are likely to consume liquor, usually in addition to beer.

Table 6. Crosstabulation of Beverage Choice 1982 By Beverage Choice 1983

	Beverage Choice 1983								
Beverage Choice 1982	Beer Only	Wine Only	Liquor Only	Beer and Wine	Beer and Liquor	Wine and Liquor	Beer, Wine and Liquor	%	N
Beer Only	58.4	2.3	6.8	5.3	21.3	1.2	4.7	37.9	732
Wine Only	21.9	28.6	15.1	5.3	11.5	10.9	6.7	5.4	210
Liquor Only	20.2	9.0	38.0	3.9	15.2	7.6	6.2	10.0	431
Beer and Wine	35.0	8.7	6.1	11.0	26.2	2.4	10.5	6.3	302
Beer and Liquor	34.4	2.8	7.2	5.6	37.9	2.7	9.4	26.4	1146
Wine and Liquor	11.6	21.3	17.3	9.2	11.1	19.4	10.1	4.9	206
Beer, Wine & Liquor	16.4	5.0	6.3	13.8	29.8	6.4	22.3	8.7	399
N	1791	257	501	285	1077	177	338	4426	
Column Total	38.8	6.1	10.9	6.5	25.1	4.2	8.4	100.0	

MEASURING LEVELS OF ALCOHOL CONSUMPTION

Since the earliest of the national epidemiological studies of alcohol use, researchers have realized that measures of simple quantity of alcohol consumed do not reflect the complexity of drinking behavior. Cahalan, et al. (1969), in what is still the basic reference on patterns of drinking, differentiated three dimensions of alcohol consumption: quantity, frequency, and variability. None of these are totally independent indices; individuals who drink more often are likely to consume more total alcohol than less frequent drinkers, regardless of daily consumption levels. Variability is related to frequency and to quantity, since respondents who have few drinking episodes or few total drinks have little occasion for varying their drinking patterns. Nevertheless, it is assumed that the implications for problem drinking are different for persons who drink a given quantity of alcohol, consuming large amounts on a few days, than for persons who drink the same total quantity, but report no more than two drinks on any one occasion.

In 1983, the questions concerning alcohol use allowed a direct assessment of the quantity, frequency, and variability of drinking behavior within the recent past 30 days. Respondents were asked on how many days they had drunk alcohol in the past 30 days. They were then asked to report on how many days they had consumed one drink, how many days they had consumed two drinks, and so on up to six or more drinks in one day. The sum of the number of days for each amount of drinking was reconciled with the reported total frequency of drinking, with estimates raised or lowered until the two reports tallied.

After inspection of frequencies and crosstabulations, respondents were classified by total number of days they drank, and by the number of days each quantity was reported consumed. Since the number of possible categories using the full range of 1 through 30 days for each level of 1 through 6 drinks is enormous, initial classifications were established for quantity and frequency.

Frequency categories were defined as infrequent, less than once a week (1 to 2 days of the last 30); occasional, once or twice a week (3 to 9 days of the last 30); or frequent, three or more times a week (10 or more days of the last 30). Level of drinking categories for each drinking day were also defined. Days when two or fewer drinks were consumed were classed as light, days when three or four drinks were consumed were classified as moderate, and days when five or more drinks were consumed were classified as heavy. Using these simplifications, the following ten categories of drinkers were defined:

1. Nondrinkers: Youth who did not drink at all in the past 30 days.
2. Infrequent Light Drinkers: Youth who drank less than once per week, and who reported no more than two drinks on any occasion.
3. Infrequent Moderate to Heavy Drinkers: Youth who drank less than once per week who reported three or more drinks on one or more occasions.
4. Occasional to Frequent Light Drinkers: Youth who drank once or twice per week and who drank more than two drinks no more than once during the last 30 days, plus youth who drank more than twice per week, and who drank more than two drinks on two or fewer days.
5. Occasional Moderate Drinkers: Youth who drank once or twice per week, who consumed three to four drinks on at least two occasions and drank five or more drinks no more than twice.
6. Occasional Heavy Drinkers: Youth who drank once or twice per week. Among those who drank 3 to 4 days (once a week), drank 5 or more drinks on at least three days. Among those who drank 5 to 9 days, drank 5 or more drinks at least 4 of those days.
7. Irregular: Youth who drank once or more per week and who did not fall into any of the other "occasional" or "frequent" categories.

8. Frequent Heavy Drinkers: Youth who drank more than twice per week and who drank five or more drinks on four or more days.

Note that the categories hinge more on quantity and frequency than on variability. The classes were created with the recognition that drinking often depends on situations. Many social events are marked by high levels of drinking which may be exceptional in terms of the general drinking pattern of the individual. Hence, for those who drank more frequently, the criteria for light or moderate drinking were relaxed to allow for such events. Categories thus correspond to the amount usually consumed during the past month, with allowance for some variability. The "irregular" category consists of youth who drink occasionally or frequently but who do report a highly variable quantity across occasions.

DESCRIPTIONS OF DRINKING PATTERNS

As noted above, few studies are available of non-student populations of young adults. The following section provides simple two way crosstabulations, describing variations in drinking patterns by major demographic categories. It is important to keep in mind that most of these characteristics are interrelated, so that apparent differences may be to some extent spurious. Notably, race, income, education, poverty, and religious background are all strongly associated. All tables are presented separately for males and females, to allow assessment of variations due to differing norms about appropriateness of drinking for men than for women among various subgroups of the population.

The tables below show four indicators of alcohol consumption. The first is the Alcohol Consumption Pattern variable described above. This variable includes non-drinkers. The other indicators, mean number of days drinking in the past thirty days, mean total number of drinks consumed in the past thirty days, and mean drinks per day when alcohol was consumed, are calculated only for youth who reported drinking at least once during that period. Plausibly, drinking may be part of a two stage process, with the decision of whether to drink at all being qualitatively different from the decisions about how often and how much to drink. For many of the tables presented below, the largest variations within the table will be found in the relative proportions of abstaniners across categories. The quantity indicators summarize variations in drinking patterns among those who have decided to drink.

Variations in Drinking Patterns by Demographic Characteristics

Sex. Table 7 shows the patterns of alcohol consumption by sex. The general distribution of drinking patterns among youth is contained in the marginal distributions. About three out of ten youth report not drinking at all in the past month. Among the drinkers, another 17 percent drank no more than twice in the last month, about equally split between light drinkers and non-light drinkers. For youth who drank once a week or more, the categories also split into approximately equal proportions of heavy drinkers, moderate or irregular drinkers, and light drinkers. The ordering of categories in the table is roughly in order of the quantity of alcohol consumed.

The table makes clear the large differences in alcohol consumption by sex. Males are more likely to drink, to drink more often, and to drink more drinks per occasion. The largest discrepancies between men and women is in the frequent heavy drinker category. Men are three times more likely than women to report drinking heavily at least twice a week. These differences are summarized in the quantity measures. On average, men drink almost twice as

Table 7. Alcohol Consumption Patterns By Sex

	Alcohol Consumption Patterns (Row Percent Distributions)								
	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Sex									
Male	21.8	7.0	6.9	14.8	10.9	7.2	14.5	16.9	6129 50.8
Female	36.8	12.4	8.4	17.3	10.4	3.4	6.8	4.5	6066 49.2
N	4141	1281	929	1817	1177	583	1164	1103	12195
Column Total	29.2	9.6	7.6	16.0	10.5	5.3	10.7	10.8	100.0

Chi-Square=1029.250 DF=7 P=.000

	Quantity Indicators[a]		
	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Sex / Alcohol Consumption Pattern			
Male	9.04	30.63	3.27
Non-Drinkers	0.00	0.00	0.00
Infrequent Light	1.49	2.07	1.38
Infrequent Nonlight	1.61	6.71	4.28
Light	7.69	12.31	1.70
Occasional Moderate	5.22	16.32	3.15
Occasional Heavy	5.90	31.75	5.45
Irregular	11.92	32.80	3.02
Frequent Heavy	17.62	74.74	4.33
Female	5.56	16.17	2.71
Non-drinkers	0.00	0.00	0.00
Infrequent light	1.50	2.08	1.38
Infrequent nonlight	1.54	5.93	3.99
Light	5.98	5.93	1.73
Occasional Moderate	5.17	9.94	3.10
Occasional Heavy	5.99	30.92	5.27
Irregular	9.90	27.90	3.12
Frequent Heavy	16.81	70.29	4.27
N		8054	

[a] Universe: Respondents who reported consuming alcohol at least once in the last 30 days.

often as women. The difference in drinks per day is smaller but still substantial.

Table 7 also shows the quantity indicators for the various alcohol categories. The variation in total quantity and frequency is expected, given the classification rules. Note that irregular drinkers have about the same average consumption per drinking day as do occasional moderate drinkers. However, irregular drinkers have a very high frequency of alcohol use, so their total consumption is much higher than that of the moderate drinkers. These means provide a comparison level for interpreting the results presented below.

Age. Tables 8 and 9 show the patterns of drinking by age as of the interview date.[2] Overall, the proportions are quite similar for males and females. In 1983, the age of the members of the NLS panel ranged from 18 to 26. The tables collapse age 25 and 26, since few youth have had their 26th birthday between January 1, 1983 and the date of their interview.

The age range of the panel covers the period when drinking becomes legal. Focusing on the distribution for males, the proportion of non-drinkers falls rapidly from 31.4 percent for 18 year olds to 20.3 percent for the 21 year olds. Past age 20, the percentage of non-drinkers in the male population remains stable at around 20 percent. Note that even among the youngest age group a majority of youth drink, many of them quite frequently. Among the drinkers, the 18 year olds drank 7 days out of the last 30, on average. The

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[2] Note that using the interview date to determine age affects the age distribution somewhat. The NLS sampling frame determined whether a youth was eligible for the study based on age as of January 1, 1979. Each year, the interviews are collected between January and April, and respondents may have celebrated their birthday before their interview. In 1983, the number of youth aged 18 is reduced from its expected value of 12.5% to 9.6%. At the same time, a roughly comparable number of youth who were 25 on January 1 turned 26 before they were interviewed. These 26 year olds were combined with the 25 year olds for purposes of this analysis.

Table 8. Alcohol Consumption Patterns by Age Among Males

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

Age	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
18	31.4	8.1	8.6	8.6	10.0	10.1	10.4	12.7	523 9.6
19	25.1	6.8	8.5	11.0	11.5	8.5	11.5	17.0	773 12.9
20	20.7	7.1	8.6	12.8	8.7	6.7	16.1	19.2	762 12.0
21	20.3	8.3	6.8	14.7	11.9	6.7	13.8	17.5	755 12.9
22	19.4	7.2	4.0	15.8	11.8	6.6	15.5	19.6	772 12.1
23	20.0	4.9	4.9	19.7	10.8	5.9	16.8	17.0	820 13.1
24	18.5	7.0	6.8	17.5	12.7	6.3	15.0	16.2	797 12.5
25-26	21.3	6.7	7.1	16.6	9.5	7.2	15.9	15.7	927 14.9
N	1583	467	448	884	638	414	799	896	6129
Column Total	21.8	7.0	6.9	14.8	10.9	7.2	14.5	16.9	100.0

Chi-Square=157.374 DF=49 P=.000

Quantity Indicators[b]

Age	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
18	6.99	25.71	3.49
19	8.35	31.18	3.54
20	9.08	31.46	3.40
21	9.08	30.88	3.20
22	9.12	31.96	3.28
23	9.39	31.07	3.14
24	9.64	30.65	3.11
25-26	9.77	30.53	3.09
N		4546	

[a] Universe: Males interviewed in 1983.

[b] Universe: Males who reported drinking on at least one day out of the last 30, 1983 interview.

average frequency of drinking increases to 9 for youth age 20, and gradually increases to just under ten days out of the past 30 for the oldest members of the sample. The average number of drinks stabilizes even earlier than the frequency of drinking. Indeed, there is even a downward trend in the drinks per day declines after age 19.

The alcohol consumption patterns show a tendency for men under the age of 22 to drink heavily when they do drink. Eighteen and nineteen year olds are more likely than other youth to fall in the infrequent non-light and occasional heavy categories. The distribution of frequent heavy drinkers is curvilinear, peaking between the ages of 20 and 22, and declining afterwards. Older respondents, age 23 and older, tend to fall into the occasional to frequent categories, but to predominately consume four or fewer drinks per day. In particular, these older members of the panel tend to report drinking only one or two drinks per day.

The overall impression gathered from the pattern of drinking for the young men is a process of initiation, with more and more men drinking over the course of young adulthood, entering a period of experimentation characterized by heavy drinking episodes, and gradually settling in to regular but moderate use of alcohol.[3]

The alcohol consumption patterns of young women show roughly similar age trends as the patterns for young men, although the variation seems less pronounced in general and the process seems to start a year later for the women than for the men. Over two fifths of the women are non-drinkers at age 18 and

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[3] Of course, there are pitfalls in infering developmental sequences from cross-sectional data. However, the restricted age range argues against major cohort effects, and the process of initial experimentation followed by integration is consistent with other socialization approaches (c.f. Radosevich, et al., 1980, Potvin and Lee, 1980).

Table 9. Alcohol Consumption Patterns by Age Among Females

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

Age	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
18	41.7	10.8	11.0	12.0	12.3	2.9	6.2	3.1	473 9.3
19	41.2	9.7	6.9	12.0	13.1	3.1	7.0	7.0	750 12.9
20	37.9	12.5	8.4	16.0	13.4	4.0	4.4	3.4	742 12.0
21	32.5	11.1	8.9	17.9	9.1	5.2	9.9	5.4	754 12.7
22	33.8	11.5	7.8	20.2	10.8	4.8	7.0	4.2	784 12.6
23	35.6	13.3	8.8	18.1	8.8	2.2	8.4	4.7	844 12.9
24	32.5	13.1	8.7	23.3	9.1	3.2	6.0	4.0	779 12.5
25-26	40.0	15.8	7.7	17.5	8.0	2.2	5.1	3.7	939 15.0
N	2557	814	481	933	539	169	365	207	6065
Column Total	36.8	12.4	8.4	17.3	10.4	3.4	6.8	4.5	100.0

Chi-Square=136.669 DF=49 P=.000

Quantity Indicators[b]

Age	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
18	4.95	15.39	2.86
19	5.58	18.96	2.97
20	5.24	14.87	2.69
21	5.65	16.68	2.83
22	5.77	16.87	2.75
23	5.82	16.83	2.61
24	6.15	15.96	2.59
25-26	5.12	13.83	2.47
N		3508	

[a] Universe: Females interviewed in 1983.

[b] Universe: Females who reported drinking on at least one day out of the last 30, 1983 interview.

19. By age 21, the proportion of non-drinkers falls to about one third, with a sharp increase in the proportion of non-drinkers among the very oldest group. This increase in abstainers does not occur (at least, not as sharply) for the men. The quantitative measures show that, among the drinkers, there is a slow increase in the number of days on which alcohol is consumed up through the age of 24, with a drop of almost a full day in the average number of drinking days between age 25 and age 25/26. Age 19 seems to be a peak drinking age for young women, both in terms of frequency and quantity.

Race. Tables 10 and 11 show the patterns of drinking separately for Hispanics, blacks, and whites.[4] Clearly, whites are more likely to drink than are minorities, and blacks are substantially less likely to drink than are either whites or Hispanics. Among those who drink, Hispanics report the lowest frequency, while blacks report the lowest total quantity of alcohol and the lowest number of drinks per occasion.

The alcohol consumption patterns show that Hispanic males are more likely to drink occasionally or infrequently than other groups, but to drink heavily on those occasions. Whites are particularly heavily overrepresented in the frequent heavy drinker and irregular drinker categories. Those black men who do drink tend to be in the light drinking categories. Relative to the other ethnic groups, blacks are very unlikely to report heavy drinking.

The patterns for women also show that drinking is predominately a white activity. However, unlike the pattern for men, Hispanic women are even less likely than black women to drink heavily. Fewer than half of the Black women had any alcohol in the past month, and most of those who drank drank lightly.

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[4] Actually, the group labelled whites includes all respondents who are not classified as blacks or Hispanics, so a few members of other races are also represented in the calculations. The overwhelming majority in the "other" category are white.

Table 10. Alcohol Consumption Patterns by Race Among Males

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

Race	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Hispanic	29.3	7.4	9.7	10.3	10.3	10.8	10.8	11.5	941 6.3
Black	36.5	9.6	6.2	18.4	9.0	2.2	11.4	6.7	1535 13.7
White	18.7	6.5	6.7	14.6	11.2	7.8	15.4	19.1	3653 80.0
N	1583	467	448	884	638	414	799	896	6129
Column Total	21.8	7.0	6.9	14.8	10.9	7.2	14.5	16.9	100.0

Chi-Square=320.938 DF=14 P=.000

Quantity Indicators[b]

Race	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Hispanic	7.52	26.74	3.51
Black	8.00	22.71	2.64
White	9.28	31.95	3.33
N		4546	

[a] Universe: Males interviewed in 1983.

[b] Universe: Males who reported drinking on at least one day out of the last 30, 1983 interview.

Table 11. Alcohol Consumption Patterns by Race Among Females

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

Race	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Hispanic	49.3	15.2	9.9	11.2	7.4	2.2	4.2	.7	962 6.3
Black	55.2	16.0	4.0	14.6	5.4	.8	2.9	1.2	1523 14.1
White	32.6	11.5	9.1	18.2	11.6	4.0	7.6	5.3	3581 79.6
N	2553	814	481	933	539	169	365	207	6066
Column Total	36.8	12.4	8.4	17.3	10.4	3.4	6.8	4.5	100.0

Chi-Square=371.124 DF=14 P=.000

Quantity Indicators[b]

Race	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Hispanic	3.84	10.12	2.56
Black	4.51	10.33	2.04
White	5.79	17.22	2.79
N		3508	

[a] Universe: Females interviewed in 1983.

[b] Universe: Females who reported drinking on at least one day out of the last 30, 1983 interview.

Socioeconomic Indicators and Alcohol Consumption

Poverty Status. Tables 12 and 13 show the distributions of alcohol consumption for youth whose family income fell below OMB poverty levels relative to non-poor youth. It is tempting to say that the table shows an income effect: youth with more money drink more. Poor youth are more likely to be non-drinkers or infrequent light drinkers. They do have a higher rate of occasional heavy drinking than do the non-poor, but this is the only category in which they outscore their more affluent counterparts.

Poor women are less likely to drink at all than non-poor women, repeating the finding for men. However, among women who reported drinking in the past month, the poor drink more heavily and more often. Women in poverty are about one third more likely than other women to be in the occasional heavy and frequent heavy drinking categories. Given that minorities, who tend to have very low levels of alcohol consumption, are overrepresented among the poor, this pattern is contrary to expectations.

Enrollment Status and Educational Attainment. Most (indeed, virtually all non-clinical) studies of drinking among young people have been done using in-school populations. The NLS allows comparisons of students and non-students in a general population.

Among the young men, high school students are predominately very young, and as expected they are less likely to drink than are other youth (Table 15). While they drink on average half as often as do other youth, they have a very high average number of drinks per day. College students drink more often than high school students, but less often than any of the non-student categories. Relative to high school students, also, college students report lower quantities per day, in contradiction to the animal house image of college men. While about one in eight college men are in the frequent heavy drinker

Table 12. Alcohol Consumption Patterns by Poverty Status Among Males

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Poverty Status									
Not in Poverty	20.4	6.9	6.7	15.1	11.5	7.1	14.7	17.6	4497 84.0
In Poverty	28.2	7.7	6.3	14.1	8.5	7.7	14.6	12.7	1233 16.0
N	1460	437	411	834	602	387	763	836	5730
Column Total	21.6	7.0	6.7	15.0	11.0	7.2	14.7	16.9	100.0

Chi-Square=87.026 DF=7 P=.000

Quantity Indicators[b]

	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Poverty Status			
Not in Poverty	9.13	30.86	3.26
In Poverty	8.61	28.74	3.22
N		4270	

[a] Universe: Males interviewed in 1983.

[b] Universe: Males who reported drinking on at least one day out of the last 30, 1983 interview.

Table 13. Alcohol Consumption Patterns by Poverty Status Among Females

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Poverty Status									
Not in Poverty	34.6	12.6	8.8	19.0	10.7	2.9	7.3	4.2	4102 80.2
In Poverty	43.1	11.6	7.5	13.8	8.9	4.2	4.8	6.0	1465 19.8
N	2305	747	446	892	494	147	341	195	5567
Column Total	36.3	12.4	8.5	17.9	10.4	3.2	6.8	4.5	100.0

Chi-Square=79.761 DF=7 P=.000

Quantity Indicators[b]

Poverty Status	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Not in Poverty	5.58	15.65	2.65
In Poverty	5.65	18.13	2.86
N		3262	

[a] Universe: Females interviewed in 1983.

[b] Universe: Females who reported drinking on at least one day out of the last 30, 1983 interview.

Table 14. Alcohol Consumption Patterns By Enrollment Status and Education Among Males

(Alcohol Consumption Patterns)
(Row Percent Distributions)

Enrollment Status and Education	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
High School Dropout	26.3	5.7	7.6	11.4	9.1	10.9	10.7	18.3	1230 15.5
High School Graduate	20.6	7.3	7.9	13.9	10.7	7.5	14.0	18.1	2654 42.1
Some College	18.1	8.6	2.2	16.8	11.6	3.9	21.2	17.7	565 9.6
College Graduate or Greater	11.9	6.7	5.2	24.5	12.2	1.4	21.5	16.6	285 6.6
High School Student	40.4	9.2	10.5	8.8	10.8	10.8	5.8	3.6	240 3.9
College Student	21.7	6.3	6.4	16.3	11.8	6.7	14.8	15.9	1124 22.4
N	1568	466	447	878	637	414	795	893	6098
Column Total	21.7	7.0	6.9	14.8	10.9	7.2	14.5	16.9	100.0

Chi-Square=260.519 DF=35 P=.000

Quantity Indicators[b]

Enrollment Status and Education	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
High School Dropout	9.23	34.66	3.66
High School Graduate	9.28	32.10	3.34
Some College	10.30	32.54	2.95
College Graduate or Greater	9.09	24.89	2.64
High School Student	4.97	18.19	3.56
College Student	8.39	27.87	3.17
N		4530	

[a] Universe: Males interviewed in 1983.

[b] Universe: Males who reported drinking on at least one day out of the last 30, 1983 interview.

Table 15. Alcohol Consumption Patterns By Enrollment Status and Education Among Females

(Alcohol Consumption Patterns)
(Row Percent Distributions)

Enrollment Status and Education	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
High School Dropout	51.0	11.1	9.5	8.3	6.1	5.5	4.0	4.4	1051 13.1
High School Graduate	39.4	12.0	10.5	14.5	9.2	3.4	7.1	4.0	2583 42.5
Some College	32.1	14.7	7.9	22.9	8.6	2.1	7.4	4.2	782 13.3
College Graduate or Greater	24.0	14.3	3.7	32.1	12.9	.7	7.6	4.7	377 7.6
High School Student	66.5	10.7	6.3	4.6	9.2	1.6	1.2	0.0	131 1.9
College Student	28.0	11.9	6.0	20.6	15.7	4.1	7.7	6.0	1110 21.6
N	2543	811	479	926	537	168	364	206	6034
Column Total	36.9	12.4	8.4	17.2	10.4	3.4	6.8	4.5	100.0

Chi-Square=343.804 DF=35 P=.000

Quantity Indicators[b]

Enrollment Status and Education	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
High School Dropout	5.28	18.44	3.13
High School Graduate	5.14	15.42	2.84
Some College	6.14	16.08	2.40
College Graduate and Up	6.56	15.59	2.22
High School Student	3.90	11.01	2.59
College Student	5.77	17.04	2.69
N		3491	

[a] Universe: Females interviewed in 1983.

[b] Universe: Females who reported drinking on at least one day out of the last 30, 1983 interview.

category, this proportion is smaller than the proportion reported by any of the non-student groups.

Among the out of school youth, the more educated groups are less likely to be non-drinkers. Almost ninety percent of the college graduates drink, compared to 74 percent of the high school graduates. Frequency of drinking is curvilinearly related to education--youth who attended college and left before receiving a baccalaureate drink more often than other groups. Higher levels of education are associated with lower daily consumption levels. While many high school dropouts abstain, almost two fifths of the dropouts are either frequent heavy or occasional heavy drinkers. Among those who drink, dropouts have the highest drinking rate.

The relationship between education and drinking is somewhat different for women than for men (Table 16). Young women in high school do not show the binging pattern demonstrated by the young men. Only about one third of the high school enrollees reported drinking at all in the past month. Among young women, the college students are most likely to be frequent heavy drinkers.

Similar to male dropouts, female high school dropouts have both a high proportion of non-drinkers and a high proportion of heavy drinkers. In contrast to high school dropouts, women with higher levels of education tend to drink often but in moderation. College graduates have both the highest average frequency and the lowest average quantity of all educational groups.

Family Background and Alcohol Use

Broken homes. Many forms of deviance and uncontrolled behavior have been popularly said to be encouraged by family break-ups. Table 16 shows the drinking patterns of young men according to whether, at age 14, they were living with both parents, with their mother only, or in some other arrangement.

Table 16. Alcohol Consumption Patterns by Family Intactness at Age 14 Among Males

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Family Intactness									
Both Parents	21.0	6.9	7.0	15.0	11.1	7.2	14.7	17.2	4686 83.2
Mother Only	25.9	7.6	5.4	14.5	10.4	6.8	13.2	16.1	1099 12.5
Other	26.4	6.5	7.5	13.5	8.3	7.6	14.5	15.7	335 4.4
N	1531	467	447	883	638	412	796	896	6120
Column Total	21.8	7.0	6.8	14.9	10.9	7.2	14.5	17.0	100.0

Chi-Square=21.589 DF=14 P=.088

Quantity Indicators[b]

	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Family Intactness			
Both Parents	9.00	30.50	3.26
Mother Only	9.37	31.55	3.24
Other	8.78	30.61	3.37
N		4539	

[a] Universe: Males interviewed in 1983.

[b] Universe: Males who reported drinking on at least one day out of the last 30, 1983 interview.

Table 17. Alcohol Consumption Patterns by Family Intactness at Age 14 Among Females

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Family Intactness									
Both Parents	35.0	12.1	8.7	17.9	11.2	3.6	6.9	4.6	4580 82.4
Mother Only	44.3	13.9	6.3	15.5	6.7	2.7	6.9	3.7	1140 13.4
Other	48.8	12.1	9.7	11.7	7.8	2.2	3.5	4.1	337 4.2
N	2552	812	481	933	538	169	365	207	6057
Column Total	36.8	12.3	8.4	17.3	10.4	3.4	6.8	4.5	100.0

Chi-Square=59.642 DF=14 P=.000

Quantity Indicators[b]

	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Family Intactness			
Both Parents	5.58	16.26	2.73
Mother Only	5.49	15.60	2.53
Other	5.61	16.23	2.82
N		3505	

[a] Universe: Females interviewed in 1983.

[b] Universe: Females who reported drinking on at least one day out of the last 30, 1983 interview.

Given the large sample size, it is worth noting that the chi square statistic between the two variables does not reach significance.

The chi square for the young women is larger, but small relative to most other relationships (Table 17). The direction of the relationship between family intactness and alcohol consumption is counter to expectations, with women from intact families consuming more alcohol more regularly and in somewhat larger quantity than women from other family types.

Religious Background. Alcohol use is a function of social norms, and such norms are expected to be associated with religious upbringing. Tables 18 and 19 break down the sample by their religious affiliation during adolescence.[5] There are strong religious influences, largely in expected directions. Fundamentalists either abstain from drinking or tend to drink infrequently, relative to other denominations. Liberal or mainstream protestants (Episcopalians, Presbyterians, etc.) are very likely to drink, but tend not to drink large quantities on a single day. Consistent with stereotype, Catholic men tend to drink often and heavily. Over one fifth are classified as frequent heavy drinkers, with another tenth in the occasional heavy category. Being brought up outside religion does not seem to lead to lack of control over alcohol consumption; in fact, those reporting no religion or unknown religion are less likely than anyone except fundamentalists to be frequent heavy drinkers.

Among women, Catholics are less likely than non-fundamentalist protestants to be frequent heavy drinkers, although they are overrepresented among other heavy drinking categories, giving them the highest average drinking rate of any religious group. Indeed, among those who drink the non-fundamentalist

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[5] Categories were established using a modification of the National Opinion Research Corporation's religious coding (Chi, 1982).

Table 18. Alcohol Consumption Patterns by Religion Raised in at Age 14 Among Males

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

Religion at Age 14	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Fundamentalist Protestant	33.9	8.3	8.7	13.3	9.5	5.2	10.3	10.9	2171 29.0
Other Protestant	21.7	7.0	6.7	13.6	10.2	7.9	14.9	18.1	762 15.5
Liberal Protestant	16.6	8.5	5.4	17.4	13.3	5.3	15.9	17.7	772 16.0
Catholic	14.5	4.7	6.6	14.5	11.4	9.0	17.5	21.9	2025 32.9
Other	8.1	10.5	6.0	31.9	7.7	8.0	13.4	14.4	73 1.7
None or Don't Know	22.0	8.4	3.3	16.4	10.9	10.6	14.6	13.8	326 4.9
N	1583	467	448	884	638	414	799	896	6129
Column Total	21.8	7.0	6.9	14.8	10.9	7.2	14.5	16.9	100.0

Chi-Square=284.570 DF=35 P=.000

Quantity Indicators[b]

Religion at Age 14	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Fundamentalist Protestant	7.87	26.06	3.16
Other Protestant	8.58	30.35	3.36
Liberal Protestant	9.83	31.36	3.02
Catholic	9.69	33.94	3.45
Other	7.63	23.05	2.79
None or Don't Know	9.28	30.48	3.17
N		4546	

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[a] Universe: Males interviewed in 1983.

[b] Universe: Males who reported drinking on at least one day out of the last 30, 1983 interview.

Table 19. Alcohol Consumption Patterns by Religion Raised in at Age 14 Among Females

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

Religion at Age 14	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Fundamentalist Protestant	52.2	11.7	7.7	13.9	4.9	2.0	4.7	2.9	2220 32.1
Other Protestant	33.0	13.1	6.3	17.8	10.3	4.1	9.6	5.7	636 13.4
Liberal Protestant	28.9	12.5	9.9	20.6	11.8	2.3	6.7	7.2	835 16.9
Catholic	27.6	12.7	9.5	18.3	14.6	5.0	7.8	4.6	2069 32.2
Other	21.0	13.8	2.7	33.5	16.4	3.0	6.9	2.5	72 1.6
None or Don't Know	40.5	11.5	9.0	14.2	12.9	5.4	5.3	1.2	234 3.7
N	2558	814	481	933	539	169	365	207	6066
Column Total	36.8	12.4	8.4	17.3	10.4	3.4	6.8	4.5	100.0

Chi-Square=317.970 DF=35 P=.000

Quantity Indicators[b]

Religion at Age 14	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Fundamentalist Protestant	5.20	14.48	2.55
Other Protestant	5.84	18.00	2.78
Liberal Protestant	5.93	17.35	2.66
Catholic	5.53	16.26	2.83
Other	5.83	14.15	2.26
None or Don't Know	5.19	14.24	2.77
N		3508	

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[a] Universe: Females interviewed in 1983.

[b] Universe: Females who reported drinking on at least one day out of the last 30, 1983 interview.

protestants are the most frequent drinkers. As with the men, the non-religious have relatively low levels of alcohol consumption.

Parental Education. One of the few measures of family context included in the NLS is the level of education of the parents of the youth in the sample. Parental education is a frequently used measure of socioeconomic background. The cross-tabular results in Tables 20 through 21 show a consistent pattern of higher levels of drinking among youth whose parents have higher levels of education. Children of high school dropouts have the highest proportion of non-drinkers. Among youth whose parents have at least some college education, the proportions of frequent drinkers, light, heavy, or irregular, are larger than among youth whose parents have less education. Sons of high school dropouts are overrepresented among the infrequent nonlight and occasional heavy drinkers, and the quantity indicators show that they drink less often but more heavily than sons of more educated parents.

Among young women who drink the relationship between drinking levels and parental educations is similar--daughters of more educated parents drink more often but in less quantity than daughters of less educated parents. Daughters of high school dropouts are twice as likely to be non-drinkers as are daughters of college educated parents.

The relationship between drinking and education seems also to be stronger for the same-sex parents. For males, both the chi-square and the apparent magnitudes of variation in drinking patterns are larger for father's education than for mother's education, while the reverse is true for females.

Transition to Adulthood and Alcohol Use

The period from age 13 to age 25 covers the period in which youth make the transition from adolescence to young adulthood. This is the part of the

Table 20. Alcohol Consumption Patterns By Mother's Educational Attainment Among Males

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

Mother's Educational Attainment	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
High School Dropout	28.0	6.3	7.9	13.0	11.0	8.9	12.1	13.0	2331 29.8
High School Graduate	20.0	6.7	6.6	14.7	10.6	7.2	16.0	18.2	2383 48.4
College	17.1	8.5	5.3	18.5	11.0	4.4	15.6	19.6	981 21.8
N	1465	437	412	825	588	378	752	838	5695
Column Total	21.8	7.0	6.7	15.0	10.8	7.1	14.7	16.9	100.0

Chi-Square=126.233 DF=14 Probability=.000

Quantity Indicators[b]

Mother's Educational Attainment	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
High School Dropout	8.21	29.02	3.41
High School Graduate	9.28	31.43	3.29
College	9.53	30.47	3.00
N		4230	

[a] Universe: Males interviewed in 1983.

[b] Universe: Males who reported drinking on at least one day out of the last 30, 1983 interview.

Table 21. Alcohol Consumption Patterns By Mother's Educational Attainment Among Females

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

Mother's Educational Attainment	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
High School Dropout	47.5	13.3	9.2	11.1	8.5	3.6	4.3	2.5	2560 33.9
High School Graduate	33.8	12.1	8.1	17.8	11.0	3.6	8.3	5.1	2258 45.2
College	23.6	12.0	7.7	27.4	12.4	3.3	7.7	6.0	929 20.9
N	2384	783	454	903	513	165	349	196	5747
Column Total	36.3	12.5	8.4	17.5	10.5	3.6	6.8	4.4	100.0

Chi-Square=297.422 DF=14 Probability=.000

Quantity Indicators[b]

Mother's Educational Attainment	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
High School Dropout	4.75	14.29	2.80
High School Graduate	5.62	16.70	2.75
College	6.35	17.02	2.50
N		3363	

[a] Universe: Females interviewed in 1983.

[b] Universe: Females who reported drinking on at least one day out of the last 30, 1983 interview.

Table 22. Alcohol Consumption Patterns By Father's Educational Attainment Among Males

Alcohol Consumption Patterns
(Row Percent Distributions)[a]

Father's Educational Attainment	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
High School Dropout	27.9	6.5	7.2	12.3	10.9	9.2	11.8	14.1	2227 32.9
High School Graduate	19.3	6.7	7.7	16.4	10.9	7.7	14.3	16.9	1787 36.0
College	16.2	7.2	5.0	16.2	10.9	4.4	19.2	20.9	1263 31.1
N	1314	398	380	769	552	360	710	794	5277
Column Total	21.2	6.8	6.7	15.0	10.9	7.2	15.0	17.2	100.0

Chi-Square=146.485 DF=14 Probability=.000

Quantity Indicators[b]

Father's Educational Attainment	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
High School Dropout	8.64	30.65	3.44
High School Graduate	8.73	29.83	3.29
College	9.85	31.81	3.09
N		3963	

[a] Universe: Males interviewed in 1983.

[b] Universe: Males who reported drinking on at least one day out of the last 30, 1983 interview.

Table 23. Alcohol Consumption Patterns by Father's Educational Attainment Aamong Females

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

Father's Educational Attainment	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
High School Dropout	45.7	13.5	9.8	12.0	7.8	3.3	4.6	3.2	2251 34.3
High School Graduate	33.9	11.7	7.6	17.8	11.0	4.1	7.9	6.0	1770 37.2
College	25.7	11.7	7.3	24.4	13.9	2.9	8.9	5.3	1180 28.5
N	2105	696	412	839	478	148	326	197	5201
Column Total	35.6	12.3	8.3	17.7	10.7	3.5	7.0	4.9	100.0

Chi-Square=246.114 DF=14 Probability=.000

Quantity Indicators[b]

Father's Educational Attainment	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
High School Dropout	4.52	13.89	2.78
High School Graduate	5.96	17.95	2.82
College	6.32	17.34	2.56
N		3096	

[a] Universe: Females interviewed in 1983.

[b] Universe: Females who reported drinking on at least one day out of the last 30, 1983 interview.

life span which sees major decisions made about selection of a spouse, fertility, and entry into the full time labor market. The youth in the NLS panel represent all combinations of these transitions. This section of the report will describe variations in drinking patterns associated with marriage, parenthood, and employment status.

In the age range represented by the 1983 NLS, substantially more women have gotten married and had children than is true for the young men. Young men are somewhat more likely than young women to be employed, but the difference between the sexes in employment is not as large as the difference in family roles.

Marital Status. For young men, marriage is associated witn lower levels of drinking, in terms of both frequency and quantity (Table 24). Among married men who drank in the month prior to the 1983 interview, the modal pattern is light drinking once or more times per week. While few of the males in the sample fall into the previously married category, over one quarter of these divorced, separated, or widowed young men are classified as frequent heavy drinkers, and another tenth are occasional heavy drinkers. Never married men show no particular pattern--they are neither particularly likely to be abstainers nor heavy drinkers, by and large.

Among young women, marriage is even more strongly associated with low levels of alcohol use than is the case for young men (Table 25). Also, there are greater differences between married and never married women than there are between married and never married men. Almost half of the married women are non-drinkers, in contrast to one third of the non-married women. The modal drinking pattern for married women is infrequent light, meaning that they had no more than four drinks in the past month. As with young men, heavy drinking is concentrated among the previously married, but the never marrieds are much

Table 24. Alcohol Consumption Patterns by Marital Status Among Males

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Marital Status									
Never Married	21.5	6.8	6.6	13.7	11.1	7.1	14.8	18.4	4387 74.2
Married, Spouse Present	24.3	7.7	7.6	19.4	10.1	7.0	13.4	10.5	1483 22.4
Previously Married	13.7	5.7	7.1	10.8	10.8	9.5	15.8	26.6	258 3.4
N	1583	467	448	884	638	414	798	896	6128
Column Total	21.8	7.0	6.9	14.8	10.9	7.2	14.5	16.9	100.0

Chi-Square=93.822 DF=14 P=.000

Quantity Indicators[b]

	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Marital Status			
Never Married	9.25	31.91	3.31
Married, Spouse Present	7.95	24.37	3.03
Other	11.09	41.40	3.59
N		4545	

[a] Universe: Males interviewed in 1983.

[b] Universe: Males who reported drinking on at least one day out of the last 30, 1983 interview.

Table 25. Alcohol Consumption Patterns by Marital Status Among Females

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Marital Status									
Never Married	31.2	11.4	7.4	18.8	13.1	4.1	8.1	5.9	3432 58.5
Married, Spouse Present	47.7	14.5	9.1	14.2	6.1	1.8	5.2	1.4	2118 34.5
Other	30.6	10.2	13.3	19.2	9.4	5.8	3.7	7.8	515 6.9
N	2558	814	481	932	539	169	365	207	6065
Column Total	36.8	12.4	8.4	17.3	10.4	3.4	6.8	4.5	100.0

Chi-Square=191.418 DF=14 P=.000

Quantity Indicators[b]

	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Marital Status			
Never Married	6.05	18.07	2.76
Married, Spouse Present	4.32	11.05	2.51
Other	6.19	19.52	3.00
N		3507	

[a] Universe: Females interviewed in 1983.

[b] Universe: Females who reported drinking on at least one day out of the last 30, 1983 interview.

more likely than other women to be in any of the other moderate or irregular drinking categories.

Parenthood. As with marriage, parenthood is associated with lower levels of alcohol consumption, especially for young women (Tables 26 and 27). For young men, living in a household which includes their children is associated with higher levels of abstaining, infrequent non-light, and occasional heavy drinking, relative to non-fathers. For young women, on the other hand, motherhood is associated with non-drinking or with infrequent drinking. Non-mothers drink more frequently than mothers, although the mean drinks per day ar almost identical.

Employment Status. Employment status as of the week prior to the interview is shown in Tables 28 and 29. The definitions of employment, unemployment, and being out of the labor force are derived from the standards used by the Department of Labor on its Current Population Survey. Employed youth have a job (although they may have been on vacation or sick leave during the actual interview week). Youth who do not have jobs must have looked for work in the past four weeks in order to be counted as unemployed, otherwise they are considered out of the labor force (OLF). For this age group, the bulk of young men who are OLF are students, although some of them are discouraged workers. For young women, in addition to students and discouraged workers OLF group includes a fair proportion of housewives.

The pattern of alcohol consumption across employment categories for young men fits with previous patterns noted for income-related characteristics. Employed youth are most likely to report regular light drinking or frequent heavy drinking, while unemployed men are overrepresented in the occasional heavy and infrequent nonlight categories. Young men who are OLF are overrepresented somewhat in the non-drinker category, but are very close to the overall percentages in the other drinking categories.

Table 26. Alcohol Consumption Patterns by Parental Status Among Males

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Living with Own Children									
No	20.9	7.0	6.6	14.9	10.8	7.0	14.6	18.1	5108 86.3
Yes	27.6	6.9	8.5	14.3	11.0	8.1	13.9	9.7	1021 13.7
N	1583	467	448	884	638	414	799	896	6129
Column Total	21.8	7.0	6.9	14.8	10.9	7.2	14.5	16.9	100.0

Chi-Square=34.392 DF=7 P=.000

Quantity Indicators[b]

	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Living with Own Children			
No	9.23	31.53	3.27
Yes	7.67	24.42	3.23
N		4546	

[a] Universe: Males interviewed in 1983.

[b] Universe: Males who reported drinking on at least one day out of the last 30, 1983 interview.

Table 27. Alcohol Consumption Patterns by Parental Status Among Females

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Living with Own Children									
No	30.5	11.4	8.2	19.8	12.4	3.6	8.1	6.0	3745 68.4
Yes	50.5	14.5	8.8	11.8	6.1	3.1	4.0	1.2	2321 31.6
N	2558	814	481	933	539	169	365	207	6066
Column Total	36.8	12.4	8.4	17.3	10.4	3.4	6.8	4.5	100.0

Chi-Square=240.244 DF=7 P=.000

Quantity Indicators[b]

	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Living with Own Children			
No	6.09	17.81	2.72
Yes	3.97	11.17	2.68
N		3508	

[a] Universe: Females interviewed in 1983.

[b] Universe: Females who reported drinking on at least one day out of the last 30, 1983 interview.

Table 28. Alcohol Consumption Patterns by Employment Status Among Males

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Employment Status									
Employed	20.1	7.1	6.4	15.9	10.8	6.7	15.8	17.1	3653 64.4
Unemployed	22.6	7.3	9.8	13.1	10.4	9.3	11.2	16.3	989 13.6
Out of the Labor Force	26.3	6.2	6.3	12.9	11.4	7.2	12.8	16.8	1487 22.0
N	1583	467	443	884	638	414	799	896	6129
Column Total	21.8	7.0	6.9	14.8	10.9	7.2	14.5	16.9	100.0

Chi-Square=61.580 DF=14 P=.000

Quantity Indicators[b]

	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Employment Status			
Employed	9.31	30.69	3.19
Unemployed	8.26	29.86	3.48
Out of the Labor Force	8.68	30.93	3.35
N		4546	

[a] Universe: Males interviewed in 1983.

[b] Universe: Males who reported drinking on at least one day out of the last 30, 1983 interview.

Table 29. Alcohol Consumption Patterns By Employment Status Among Females

Alcohol Consumption Patterns[a]
(Row Percent Distributions)

	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Employment Status									
Employed	30.6	12.8	8.8	20.4	11.7	3.3	7.2	5.2	3291 61.3
Unemployed	38.7	13.7	9.2	13.5	8.9	3.6	8.7	3.7	741 10.4
Out of the Labor Force	49.7	10.9	7.4	11.8	8.2	3.7	5.1	3.1	2034 28.4
N	2558	814	481	933	539	169	365	207	6066
Column Total	36.8	12.4	8.4	17.3	10.4	3.4	6.8	4.5	100.0

Chi-Square=193.861 DF=14 P=.000

Quantity Indicators[b]

	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Employment Status			
Employed	5.77	16.52	2.67
Unemployed	5.14	15.86	2.80
Out of the Labor Force	5.13	15.27	2.79
N		3508	

[a] Universe: Males interviewed in 1983.

[b] Universe: Males who reported drinking on at least one day out of the last 30, 1983 interview.

Among the young women, the contrast between youth who are employed with youth who are unemployed is quite similar to the patterns observed for the young men. The OLF group, however, is further from the overall drinking distribution. Almost half of the OLF women are non-drinkers. Partly in consequence, they are underrepresented in almost all the other categories. Among those who drink, OLF women are more similar to the unemployed than to the employed women.

OCCUPATIONAL AND INDUSTRIAL PATTERNS OF ALCOHOL USE

Alcohol use is generally considered to be strongly influenced by the psychosocial context of youth. One major branch of the literature on alcohol research deals with alcohol use among various occupational groups. Most of these studies are done within a single occupation or contrasting a limited number of occupations. The NLS, which represents a major research effort on the part of the Department of Labor, has recorded the work histories of the youth panel in some detail. What follows is only a cursory pass over the data, with the intent of tracking broad occupational and industrial patterns of alcohol consumption. The analysis is limited to youth who were employed as of the interview date. The jobs described are the jobs held in the week prior to the interview. Even restricting the sample, the number of respondents exceeds 3,000 for both males and females.

Occupation. Tables 30 and 31 show the distributions of alcohol patterns according to broad occupational categories.[5] Relative to other dimensions,

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[6] Farmers and farm laborers were eliminated from the analysis because there were very few respondents in this category. Preliminary tables suggested that the patterns of drinking shown by farmers were distinct from other groups, so combining farmers with other groups would add noise to the data. There were also too few private household workers for separate analysis, but it was determined that adding them to the service occupations was appropriate.

Table 30. Alcohol Consumption Patterns By Occupation Among Males

(Alcohol Consumption Patterns)[a]
(Row Percent Distributions)

Occupation	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Professional, Technical	19.3	7.0	4.3	21.7	11.4	1.2	18.5	16.6	328 11.0
Managers, Administrators	14.6	5.8	4.7	17.1	8.1	6.0	29.7	14.0	178 6.0
Sales	14.8	10.7	6.2	24.1	8.8	4.2	11.1	20.0	174 5.8
Clerical	22.9	7.1	6.3	20.0	10.5	5.7	15.7	11.9	392 11.6
Craftsmen	20.0	6.6	5.6	12.9	11.3	10.3	14.8	18.6	598 16.7
Operatives	20.5	5.9	6.2	13.0	14.0	7.8	13.3	19.2	707 18.8
Laborers	21.9	6.2	8.9	13.8	9.1	6.2	16.6	17.3	488 13.1
Service, Private Household	19.4	9.4	7.1	13.1	9.9	7.6	14.6	18.9	660 17.0
N	811	272	251	557	381	223	491	539	3525
Column Total	19.9	7.2	6.3	15.8	10.9	6.7	15.9	17.4	100.0

Chi-Square=89.802 DF=49 P=.0003

Quantity Indicators[b]

Occupation	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Professional, Technical	8.85	25.45	2.67
Managers, Administrators	10.93	33.35	2.98
Sales	10.09	29.51	2.87
Clerical	7.99	24.38	2.99
Craftsmen	9.26	32.39	3.45
Operatives	9.19	33.32	3.46
Laborers	9.73	33.56	3.36
Service, Private Household	9.46	31.95	3.22
N		2714	

[a] Universe: Employed males interviewed in 1983.

[b] Universe: Employed males who reported drinking on at least one day out of the last 30, 1983 interview.

Table 31. Alcohol Consumption Patterns By Oocupation Among Females

(Alcohol Consumption Patterns)
(Row Percent Distributions)

Occupation	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Professional Technical	24.0	16.9	5.5	28.6	13.3	.3	7.5	4.0	356 11.5
Managers, Administrators	19.2	14.6	6.9	21.5	16.1	6.9	11.8	3.1	127 4.1
Sales	31.3	11.4	7.9	20.7	14.2	5.8	4.4	4.3	252 8.4
Clerical	29.8	13.3	9.8	20.4	12.5	2.4	7.5	4.4	1316 40.7
Craftsmen	27.7	15.6	9.5	21.4	8.9	4.1	9.4	3.4	49 1.4
Operatives	43.7	10.7	9.7	8.1	9.4	4.1	8.4	5.9	247 6.0
Laborers	26.9	9.9	10.4	24.7	6.0	10.8	1.6	9.7	48 1.6
Service, Private Household	33.1	11.2	9.1	19.5	9.4	3.8	6.7	7.3	875 26.4
N	1147	454	262	606	344	92	230	135	3270
Column Total	30.4	12.9	8.8	20.5	11.7	3.3	7.2	5.2	100.0

Chi-Square=121.528 DF=49 P=.000

Quantity Indicators[b]

Occupation	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Professional, Technical	6.00	13.96	2.21
Managers, Administrators	6.19	17.37	2.78
Sales	5.74	16.46	2.80
Clerical	5.34	15.18	2.62
Craftsmen	4.75	12.44	2.47
Operatives	5.87	19.36	3.08
Laborers	5.60	19.59	2.95
Service, Private Household	6.37	19.29	2.84
N		2123	

[a] Universe: Employed females interviewed in 1983.

[b] Universe: Employed females who reported drinking on at least one day out of the last 30, 1983 interview.

the relationship between drinking and occupation for young men is significant but small. Craftsmen and operatives have very similar patterns, drinking less often than some other groups but consuming the highest quantity of alcohol per drinking day of any category. Professionals tend to be light drinkers, but have relatively low frequency. Counter to the stereotype of multiple martini afternoons, men in sales, while having a relatively high frequency of drinking also record a fairly low drinking rate.

The occupational distribution for women reflects the traditional concentration of women in clerical and service jobs. As with the men, those in professional jobs tend to drink regularly but at low daily levels. Blue collar women tend to drink less frequently but more heavily. Rather than following the pattern of their male counterparts, the relatively few women in craft occupations drink they drink less often and lower quantities than do women in other classes. Women in the lower skill occupational groups--operatives, laborers, and service workers--drink larger quantities per day than do other women. At the same time, a high proportion of these low skill groups are nondrinkers.

Industry. Table 32 shows the patterns for young men broken down by common industrial classification. Agriculture and mining have been deleted due to low rates of participation. Because large numbers of young people are employed in restaurants and bars, the category of eating and drinking places was separated from other trade industry codes. This single category contains over eight percent of the total number of employed men.

Given the size of the sample, the relationship between industry and drinking among young men is tenuous, although significant. The entertainment industry are the heaviest drinkers, any way drinking is measured. The lowest levels of alcohol use are reported in the professional servces and the finance and insurance industries.

Table 32. Alcohol Consumption Patterns By Industry Among Males

(Alcohol Consumption Patterns)
(Row Percent Distributions)

	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Industry									
Construction	17.1	7.8	7.2	15.7	14.3	10.1	14.3	13.5	324 9.3
Manufacturing	19.6	6.3	6.3	14.3	10.8	8.3	15.6	18.8	717 20.8
Transportation, Communications	20.1	6.9	8.9	16.1	10.0	6.4	16.1	15.5	207 5.8
Trade	20.2	6.8	7.5	17.3	9.3	7.4	14.5	17.0	697 22.4
Finance, Insurance	16.5	9.8	3.8	14.9	15.4	3.0	22.7	13.9	106 2.9
Business, Repair	17.4	7.0	6.7	18.1	9.2	4.4	18.6	18.6	325 9.0
Personal Services	13.8	6.9	4.7	13.2	14.5	4.3	15.9	26.8	119 3.5
Entertainment, Recreation	18.0	1.0	8.6	16.1	6.3	9.7	18.0	22.3	80 2.6
Professional Services	26.3	9.4	3.3	13.9	11.2	2.8	17.1	16.0	373 10.9
Public Administration	17.5	7.8	12.3	15.1	18.5	7.2	9.7	11.9	142 3.9
Eating and Drinking Places	20.3	9.2	4.6	15.4	8.4	7.9	15.5	18.7	307 8.8
N	784	266	245	530	368	216	472	516	3397
Column Total	19.7	7.3	6.5	15.7	10.9	6.9	15.7	17.3	100.0

Chi-Square=95.166 DF=70 P=.024

Quantity Indicators[b]

	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Occupation			
Construction	8.91	27.74	3.23
Manufacturing	9.51	32.31	3.29
Transportation, Communications	8.35	27.84	3.22
Trade	9.18	31.04	3.27
Finance, Insurance	8.67	25.32	2.91
Business, Repair	10.33	32.52	3.08
Personal Services	10.14	33.87	3.17
Entertainment, Recreation	11.71	39.47	3.61
Professional Services	7.98	26.60	3.00
Public Administration	7.23	23.49	3.19
Eating and Drinking Places	10.41	36.67	3.09
N		2613	

[a] Universe: Employed males interviewed in 1983.

[b] Universe: Employed males who reported drinking on at least one day out of the last 30, 1983 interview.

Table 33. Alcohol Consumption Patterns By Industry Among Females

(Alcohol Consumption Patterns)
(Row Percent Distributions)

	Non-Drinkers	Infrequent Light	Infrequent Nonlight	Light	Occasional Moderate	Occasional Heavy	Irregular	Frequent Heavy	Row Total
Industry									
Manufacturing	35.2	12.5	9.1	16.5	11.3	4.0	5.3	6.1	411 11.8
Transportation, Communications	18.0	13.6	13.5	31.6	11.8	0.0	7.0	4.6	96 2.7
Trade	28.0	11.4	10.6	20.0	13.7	4.9	6.2	5.1	584 18.7
Finance Insurance	27.9	11.5	10.2	22.6	13.6	3.1	2.5	1.6	296 9.3
Business, Repair	23.1	10.2	3.5	25.8	10.9	5.0	15.0	6.4	111 3.6
Personal Services	41.6	9.8	8.6	16.8	7.9	4.3	6.6	4.4	233 7.1
Entertainment, Recreation	13.1	10.1	3.3	22.5	12.7	9.4	7.9	21.1	54 1.8
Professional Services	31.5	16.3	7.2	22.1	10.8	1.3	6.8	4.0	890 27.6
Public Administration	43.3	17.0	14.9	12.7	5.7	3.0	3.5	0.0	167 4.7
Eating and Drinking Places	26.0	9.6	7.8	20.5	14.9	3.6	8.1	9.5	377 12.1
N	1131	448	259	595	341	91	223	131	3219
Column Total	30.5	12.8	8.9	20.5	11.8	3.3	7.1	5.1	100.0

Chi-Square=149.239 DF=63 P=.000

Quantity Indicators[b]

	Mean Number of Days Drank in Last Month	Mean Number of Drinks in Last Month	Mean Drinks per Drinking Day
Industry			
Manufacturing	5.88	17.57	2.82
Transportation, Communication	5.96	16.53	2.57
Trade	5.35	16.02	2.80
Finance, Insurance	5.03	13.08	2.55
Business, Repair	7.75	22.27	2.62
Personal Services	5.64	16.95	2.83
Entertainment, Recreation	9.96	36.35	3.16
Professional Services	5.30	13.82	2.40
Public Administration	3.34	9.43	2.76
Eating and Drinking Places	7.29	21.08	2.85
N		2088	

[a] Universe: Employed females interviewed in 1983.

[b] Universe: Employed females who reported drinking on at least one day out of the last 30, 1983 interview.

Among the young women, the relationship between industry and alcohol use is stronger, but not necessarily more meaningful. As with the men, women in entertainment are heavy drinkers. Young women who work in eating and drinking places also report drinking alcohol frequently and in relatively large quantities. The pattern suggests that drinks may be more available to these groups, since they are often part of the workplace itself. Over two fifths of the women in public administration are non-drinkers, and those who do drink report the lowest mean frequency of any group.

CONCLUSIONS

The results of the consistency and change analysis suggest some caution in interpreting the results. Alcohol use patterns are dynamic, not static, so treating them as permanent traits of individuals is misleading. Nevertheless, at least three patterns emerge from the bivariate tables presented above.

First, there are age trends in the data which suggest that drinking to the point of drunkeness may peak at about age 19 or 20. The pattern is consistent with a period of experimentation with alcohol, perhaps as a symbol of the larger transition into adulthood, followed by integration of light to moderate levels of alcohol as a part of a life style.

One factor which may affect the patterns of alcohol consumption across chronological age is the entry of young men and women into adult roles. For women particularly, being married and having children are associated with low levels of alcohol consumption. Older youth are more likely to have undertaken the roles of spouse and parent. Possibly, the apparent age effect is largely due to the proportions of young people who have started their own families.

Variables associated with social class also show a consistent pattern. Youth with more education, whose parents have at least some college, who are not poor, who are white, and who come from mainstream churches, tend to drink twice a week or more, but generally in moderation. Youth with the characteristics associated with lower levels of income and status, on the other hand, have much higher proportions of non-drinkers and overall drink less frequently than other youth, but those who drink tend to drink larger quantities per drinking day. Perhaps two subcultures can be identified in these less privileged groups, one which frowns on alcohol consumption in any amount, and another which condones or encourages heavy drinking.

Occupation and industry seem to have little effect on drinking, at least as measured in the NLS. Higher status occupations do tend to show the frequent controlled drinking pattern associated with high status groups. Industrial patterns are less easy to describe, except that youth who are likely to come in contact with alcohol in the course of their work are likely to drink more frequently (and perhaps more heavily) than youth in other industries.

The goal of this report has been more to describe the drinking patterns present in the NLS data than to explain them. Clearly, multivariate analysis will help to determine which of the dimensions have stable relationships with drinking and which relationships are spurious. Repeated measures will further help to determine the consistency of alcohol consumption, and most importantly, what factors are associated with persistent alcohol-related problems.

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APPENDIX A

DECK 42

1982 Survey Instrument: Alcohol Use Section

SECTION 13: ALCOHOL USE

1. Next I'd like to ask you some questions about drinking alcoholic beverages, including beer, wine, and liquor. Have you ever had a drink of an alcoholic beverage?

Yes	1	70/
No ... (SKIP TO SECTION 14)	0	

---

2. How old were you when you first started drinking? PROBE: For example, having two or more drinks a week?

ENTER AGE |_|_| 71-72/

IF VOLUNTEERED: Never have 00

---

3. Have you had any alcoholic beverages, including beer, wine, or liquor, during the last 30 days?

Yes	1	73/
No .... (SKIP TO Q. 10)	0	

---

4. How often have you had 6 or more drinks on one occasion during the last 30 days? Would you say it was .. (READ CATEGORIES) ..?

10 or more times	6	74/
8 or 9 times	5	
6 or 7 times	4	
4 or 5 times	3	
2 or 3 times	2	
Once	1	
Never	0	

---

5. How often in the last 30 days did you go to bars, taverns, or cocktail lounges? Did you go .... (READ CATEGORIES) ..?

HAND CARD Y

Almost every day	5	75/
Several times a week	4	
Once or twice a week	3	
2-3 times during the month	2	
Once this month	1	
Never	0	

BEGIN DECK 4

Next, I'd like some information about drinking alcoholic beverages, including beer, wine, and liquor, during the past week.

6. During the last seven days, on how many days did you drink alcoholic beverages?

1 day	01	10-11/
2 days	02	
3 days	03	
4 days	04	
5 days	05	
6 days	06	
7 days	07	
None ....(SKIP TO Q. 10)	00	

---

7. During the last seven days, how many cans or bottles of beer did you have?

ENTER NUMBER OF CANS OR BOTTLES |__|__| 12-13/

None 00

---

8. During the last seven days, how many glasses of wine did you have?

ENTER NUMBER OF GLASSES |__|__| 14-15/

None 00

---

9. During the last seven days, how many drinks did you have containing liquor, such as whiskey, vodka, gin, brandy, etc.?

ENTER NUMBER OR DRINKS |__|__| 16-17/

None 00

---

10. A. Has drinking ever interfered or caused a problem with your school work?

Yes	1	18/
No	0	

B. Has drinking ever interfered or caused a problem with your work on a job?

Yes	1	19/
No	0	

---

11. INTERVIEWER: WAS ANYONE ELSE PRESENT BESIDES YOU AND THE R WHEN YOU ASKED THE QUESTIONS IN SECTION 13?

YES	1	20/
NO	0	

SECTION 12: ALCOHOL USE

1. Next I'd like to ask you some questions about drinking alcoholic beverages, including beer, wine, and liquor. Have you ever had a drink of an alcoholic beverage?

Yes	1	19/
No .... (SKIP TO Q.14)	0	

---

2. A. How old were you when you first began drinking alcoholic beverages on a regular basis, that is at least once or twice a month?

ENTER AGE |__|__| 20-21/

Do not drink once or twice a month ..... (GO TO Q. 3) 00

B. How old were you when you first began drinking alcoholic beverages at least once or twice a week?

ENTER AGE: |__|__| 22-23/

Do not drink once or twice a week 00

---

3. Have you had any alcoholic beverages, including beer, wine, or liquor, during the last 30 days?

Yes	1	24/
No .... (SKIP TO Q. 13)	0	

---

4. How often have you had 6 or more drinks on one occasion during the last 30 days? Would you say it was .... (READ CATEGORIES) ..?

HAND CARD W

10 or more times	6	25/
8 or 9 times	5	
6 or 7 times	4	
4 or 5 times	3	
2 or 3 times	2	
Once	1	
Never	0	

---

5. During the last 30 days, on how many days did you drink any alcoholic beverages, including beer, wine, or liquor?

ENTER # OF DAYS: |__|__| 26-27/

6. Now we would like to ask you how many drinks you had on those days. Of the (NUMBER OF DAYS IN Q. 5) days you mentioned, on how many of those days did you have 1 drink? On how many of those days did you have 2 drinks? (REPEAT QUESTION FOR EACH CATEGORY AS NECESSARY)

HAND CARD X

. . .1 drink?	ENTER # OF DAYS:	|__|__|	28-29/
. . .2 drinks?	ENTER # OF DAYS:	|__|__|	30-31/
. . .3 drinks?	ENTER # OF DAYS:	|__|__|	32-33/
. . .4 drinks?	ENTER # OF DAYS:	|__|__|	34-35/
. . .5 drinks?	ENTER # OF DAYS:	|__|__|	36-37/
. . .6 or more drinks?	ENTER # OF DAYS:	|__|__| +	38-39/
TOTAL # OF DAYS =		|__|__|	40-41/

A. INTERVIEWER: DOES TOTAL # OF DAYS OF Q. 6 = # OF DAYS IN Q. 5?

YES.................................. 1

NO...(RECHECK Q.5 AND Q.6 WITH R).... 0

---

7. How often in the last 30 days did you go to bars, taverns, or cocktail lounges? Did you go ... (READ CATEGORIES) ...? (INTERVIEWER: DO NOT INCLUDE RESTAURANTS)

HAND CARD Y

Almost every day	5	42/
Several times a week	4	
Once or twice a week	3	
2-3 times during the month	2	
Once this month	1	
Never	0	

---

8. On how many days have you had a hangover that interfered with your activities the next day during the last 30 days?

ENTER # OF DAYS: |__|__| 43-44/

Never 00

Next, I'd like some information about drinking alcoholic beverages, including beer, wine, and liquor, during the past week.

9. During the last seven days ending with yesterday, on how many days did you drink alcoholic beverages?

1 day	01	45-46/
2 days	02	
3 days	03	
4 days	04	
5 days	05	
6 days	06	
7 days	07	
None ....(SKIP TO Q. 13)	00	

---

10. During the last seven days, how many cans or bottles of beer did you have?

ENTER NUMBER OF CANS OR BOTTLES: |__|__| 47-48/

None 00

---

11. During the last seven days, how many glasses of wine did you have?

ENTER NUMBER OF GLASSES: |__|__| 49-50/

None 00

---

12. During the last seven days, how many drinks did you have containing liquor, such as whiskey, vodka, gin, brandy, etc.?

ENTER NUMBER OR DRINKS: |__|__| 51-52/

None 00

---

13. A. Has drinking ever interfered with your school work?

Yes	1	53/
No	0	

B. Has drinking ever interfered with your work on a job?

Yes	1	54/
No	0	

---

14. INTERVIEWER: WAS ANYONE ELSE PRESENT BESIDES YOU AND THE R WHEN YOU ASKED THE QUESTIONS IN SECTION 12?

YES	1	55/
NO	0	
PHONE INTERVIEW	2	

The Center has also been active in manpower planning both in the U.S. and in the developing countries. A project for the Ohio Advisory Council for Vocational Education identified the highly fragmented institutions and agencies which supply vocational and technical training in Ohio. Subsequent projects for the Ohio Occupational Information Coordinating Committee have followed graduates of these programs. These data and information on occupational distributions of employers collected for the Occupational Employment Statistics Program are being integrated into a comprehensive planning model which will be accessible to trainees and employers and linked to a national network.

Another focus of the Center's research is industrial relations and collective bargaining. In a project for the U.S. Department of Labor, staff members are working with unions and management in a variety of industries to evaluate several current experiments for expedited grievance procedures. The procedural adequacies, safeguards for due process, and cost and timing of the new procedure are being weighed against traditional arbitration techniques.

Senior staff also serve as consultants to many boards and commissions at the national and state level. Recently the Center's staff have produced papers and prepared testimony for the Department of Labor, the Vice President's Task Force on Youth Unemployment, the Joint Economic Committee of Congress, the National Commission for Employment and Unemployment Statistics, the National Commission for Employment Policy, the White House Conference on the Family, the Ohio Department of Corrections, the Ohio Board of Regents, the Ohio Governor's Task Force on Health, and the Ohio Governor's Task Force on Welfare.

The Center maintains a working library of approximately 10,000 titles, including a wide range of reference works and current periodicals, as well as an extensive microfilm and microfiche collection. Through their facilities linked to the University computer, the Center's data processing staff provide statistical, technical, and programming support both for in-house researchers and the over 250 users of the National Longitudinal Surveys data tapes. They maintain the NLS tapes, data base, documentation, and associated software.

For information on specific Center activities, write: Director, Center for Human Resource Research, 5701 North High Street, Worthington, Ohio 43085.

OSU

The Ohio State University

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Center for Human Resource Research

The Center for Human Resource Research is a policy-oriented multidisciplinary research organization affiliated with The Ohio State University. Established in 1965, the Center is concerned with a wide range of contemporary problems related to developing and conserving human resources. Its more than thirty senior staff members come from disciplines including economics, education, English, health sciences, industrial relations, management science, psychology, public administration, social work, and sociology. This multidisciplinary team is supported by approximately 70 graduate research associates, full-time research assistants, computer programmers, and other personnel.

The Center has become preeminent in the fields of labor market research and manpower planning. With continuing support from the United States Department of Labor, the Center has been responsible since 1965 for the National Longitudinal Surveys of Labor Market Experience. Staff have assisted in population and human resource planning throughout the world, having conducted major studies in Bolivia, Ecuador, Kenya, Sierra Leone, Venezuela, and Zaire. At the request of the National Science Foundation, a review of the state of the art in human resource planning was conducted. Other studies have assessed the impact of labor and education policy on labor supply and evaluated employment statistics collection methods. Senior personnel are also engaged in several other areas of research—collective bargaining and labor relations, evaluation and monitoring of the operation of government employment and training programs, and the projection of health education and facility needs.

The Center for Human Resource Research has received over two million dollars annually from government agencies and private foundations to support its research in recent years. Providing support have been the U.S. Departments of Labor, State, Defense, Education, Health and Human Services; Ohio's Health and Education Departments and Bureau of Employment Services; the Ohio cities of Columbus and Springfield; the Ohio AFL-CIO; the George Gund Foundation; the Rockefeller Foundation; and the Ford Foundation. The breadth of the Center's research interests is best illustrated by a brief review of a few of its current projects.

The Center's largest project is the National Longitudinal Surveys of Labor Market Experience. This project has involved repeated interviews over a fifteen-year period with four groups of the United States population: older men, middle-aged women, and young men and women. The data are collected for 20,000 individuals by the U.S. Bureau of the Census, and the center is responsible for data analysis. Since 1979, the NLS has followed an additional cohort of 13,000 young men and women between the ages of 14 and 21. This cohort includes for the first time those serving in the armed forces at the time of the initial interview. In addition to being the definitive U.S. national data set on the labor market activities of young adults, this continuing survey includes unique batteries of questions on such socially important issues as delinquency, alcohol and drug use, fertility, and prenatal care. For this cohort, field work is handled by the National Opinion Research Center. To date the Center's staff have prepared dozens of research monographs, special reports, and books on the NLS, and they also prepare and distribute data tapes for public use.

The Quality of Work Life Project, another ongoing study, began in 1975 as an attempt to improve the productivity and the meaningfulness of work for public employees in the cities of Springfield and Columbus. Center staff also served as third party advisers and researchers exploring new techniques for attainment of management-worker cooperation and worker health in a number of central Ohio private sector industries.

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Center for Human Resource Research

The Ohio State University

Status Variations in Alcohol Use
among Young Adults:
Results from the 1984
National Longitudinal Surveys of Youth

by

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Center for Human Resource Research

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Status Variations in Alcohol Use among Young Adults:
Results from the 1984 NLS of Youth

INTRODUCTION

Previous reports in this series have focused on descriptions of alcohol use patterns in the National Longitudinal Surveys of Labor Market Experience of Youth (NLS). This report extends the descriptive material to the 1984 data, and extends those results with multivariate anlayses of alcohol use patterns as they are related to indicators of socio-economic status. In 1984, the questions on alcohol use were supplemented for the first time with questions on problems resulting from alcohol use. A major portion of this report will detail the patterns of reported problem within the young adult population.

Concepts of Consumption.

Alcohol is unique among drugs in that its use is considered part of normal adulthood by a large majority of the population. At the same time, excessive use of alcohol is a well-documented social problem (Institute of Medicine, 1980). The boundaries between having a good time and problem drinking are blurred. Alcohol use increased substantially over the 1960's and 70's, and the trend may be continuing (Smart and Murray, 1981).

One of the problems of discussing alcohol use is the lack of consensus about the appropriate measurement of drinking behavior. Most of the epidemiological literature uses some form of quantity or quantity-frequency measure (c.f., Radosevich, et al., 1979). Quantity measures simply aggregate the reports of alcohol use into a single figure, usually given in terms of alcohol per unit time (day, week, or month). Adding the frequency dimension to the quantity measures offers the possibility of distinguishing between people who drink regualarly but in moderation from those who drink heavily but on fewer occasions.

A major problem with the quantity-frequency approach, usually unstated, is that the typologies are generally imposed upon the data. To my own knowledge, there have been no attempts to determine if the quantity-frequency categories actually identify stable, distinguishable groups of drinkers.[1] A second problem is with interpretation of results, since the dimensions of quantity and frequency are intertwined.

The previous report in this series presented a descriptive analysis of such a quantity-frequency index. Most of the significant differences in drinking behavior among various demographic groups turned out to be between drinkers and non-drinkers. In general, factors associated with higher levels of income and social status were also associated with a higher probability of drinking. The patterns of results suggested that some of the same social status factors which were associated with higher likelihood of abstention from alcohol were also associated, among those who did drink, with high quantities of alcohol per drinking occasion.

In light of these results, the current analysis will separate the quantity-frequency measure back into its components. This report will consider drinking behavior to be a function of three types of decisions, following a logical sequence. The first choice is simply whether or not the individual will consume alcohol at all, indexed by dichotomizing the respondents into drinkers vs. non-drinkers. Among drinkers, the next choice determines which occasions are appropriate for the consumption of alcohol, a choice indexed by the frequency of consumption. The final choice, for each occasion, is the quantity of alcohol desired, measured by the average quantity consumed per drinking occasion.

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[1] Repeated attempts to develop categories based on cluster analysis using the current data set failed, both because of the limitations of the cluster technology and because, perhaps, the space defined by the measures of alcohol consumption does not contain neat substructures which could be identified by clustering.

The quantity or frequency of alcohol consumption are of interest mainly because they are presumed to indicate the likelihood of problem drinking. The NLS is unusual in that both drinking behavior and drinking consequences are measured in the same study. In 1984, for the first time, respondents were asked whether their drinking had ever cause them to have any one of a list of possible problems. This report will look at factors which are associated with problem drinking, and contrast the results with those derived from the analysis of drinking patterns.

THE SAMPLE: THE NLS OF YOUTH.

The NLS of Youth is a panel study, initiated by the Department of Labor in 1979 with a mission of studying the transition of young people into the labor force. The initial panel included 12686 respondents between the ages of 14 and 21 as of January 1, 1979. The sample design called for a nationally representative cross-sectional base with supplemented with samples of blacks, Hispanics, non-black non-Hispanic economically disadvantaged youth, and youth in the military. Members of the panel have completed hour-long face-to-face interviews each year since 1979. The retention rate has been excellent, with approximately 95 percent of the original sample remaining in the study.

ALCOHOL USE MEASURES IN THE NLS OF YOUTH

Alcohol use measures were first introduced on the NLS survey instrument in 1982, and have been repeated and expanded in 1983 and 1984. The initial items focused on drinking patterns in the week prior to the interview. In 1983, questions were added concerning drinking quantities and frequencies in the preceding month. Since drinking is notoriously affected by situational influences, the longer period should give a better picture of the respondent's usual patterns of drinking, while keeping the reporting period short enough for accurate recall (Armor and Pollich, 1982). The items used in 1984 are shown in the appendix.

The reports of drinking in the last week include questions on the number of days on which the respondent drank, followed by questions on the total number of drinks of beer, wine, and liquor consumed during the week. The total number of drinks is highly correlated with the frequency of drinking. By computing the average number of drinks per drinking day, the correlation is substantially reduced, allowing quantity to be differentiated from frequency.

As has been noted, a one week period of observation is expected to be rather unstable as a measure of individual drinking behavior. In 1983 and 1984, respondents were asked the number of days out of the past month they had used alcohol. The question about frequency was followed up with questions about the number of days on which one drink was consumed, the number of days on which two drinks were consumed, and so on up to six or more drinks. Analogously with the data for the past week, the number of days and the average number of drinks per drinking day are used as indicators of frequency and quantity of alcohol use.

AGE AND TRENDS IN ALCOHOL CONSUMPTION

When the 1984 data are included, we can trace the one-month drinking patterns for two years and the one-week drinking patterns for three years. The age range of the NLS alcohol study, taken across years, spans the time when young people are making the transition from youth to adulthood. For many, this transition will involve establishing their patterns of alcohol use or non-use. Figures 1 through 3 track the patterns of alcohol use by age at the time of the interview, using the three years of observations as three replications.[2] The tables indicate separately for men and women then changes in alcohol use patterns, patterns which seem consistent and logical.

While the range of scores for men and women are quite similar, the figures show that there is no overlap at all in the mean frequency or quantity of alcohol consumed. Men report consistently higher levels of drinking, and the difference is fairly constant over ages and over time. Reported alcohol use levels are generally highest in the first year. This trend is more likely to be a function of the change in the extensiveness of the reports of alcohol years between the first and second year of data collection than it is to be a real period effect.

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[2] All ages presented are age at the time of interview, since the alcohol questions refer to the period immediately prior to the interview date. For the purposes of the Figures, the oldest and youngest cohorts have been omitted. The interview dates span a period from January through approximately April of each year. Eligibility for inclusion for the sample was based on age on January 1, 1979. Thus, in 1982, a portion of the youth who were 24 on January 1 had turned 25 by the interview date. Note also that these 25 year olds were also more likely than other youth to have had their interview within one week of their actual birthdays. Since alcohol is associated with celebrations, including birthdays, it is not surprising that these oldest members of the youth cohort show an abnormally high amount of alcohol consumption, relative to youth in other age groups. Conversely, the very youngest age group consists disproportionately of youth who would celebrate their birthdays at a time removed from the interview date, and would thus report on average lower consumption levels.

Figure 1: Number of Days Drank in Previous Week, by Age, for Each Survey Year

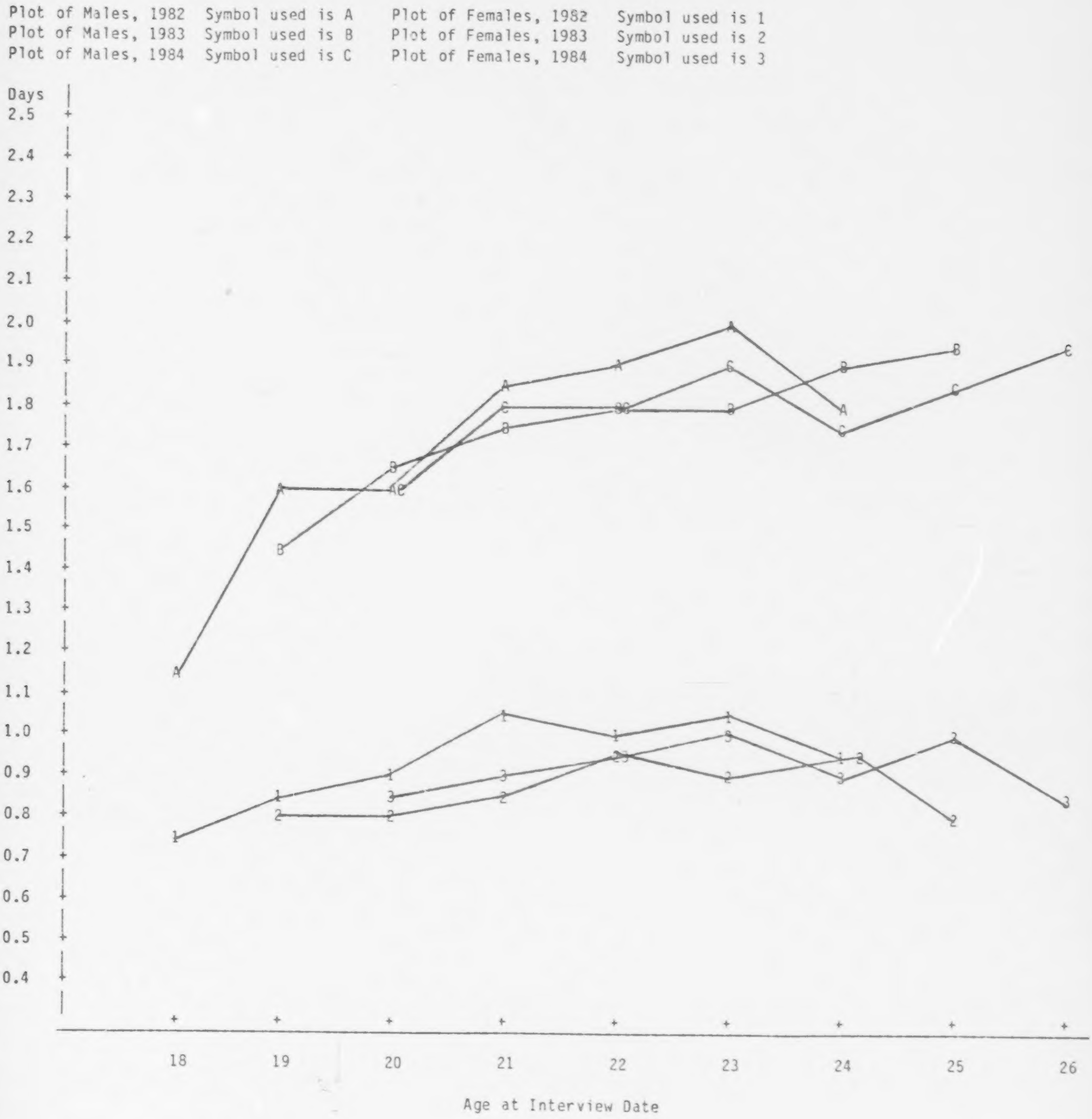


Figure 2: Total Number of Drinks Consumed in Past Week, by Age, for Each Survey Year

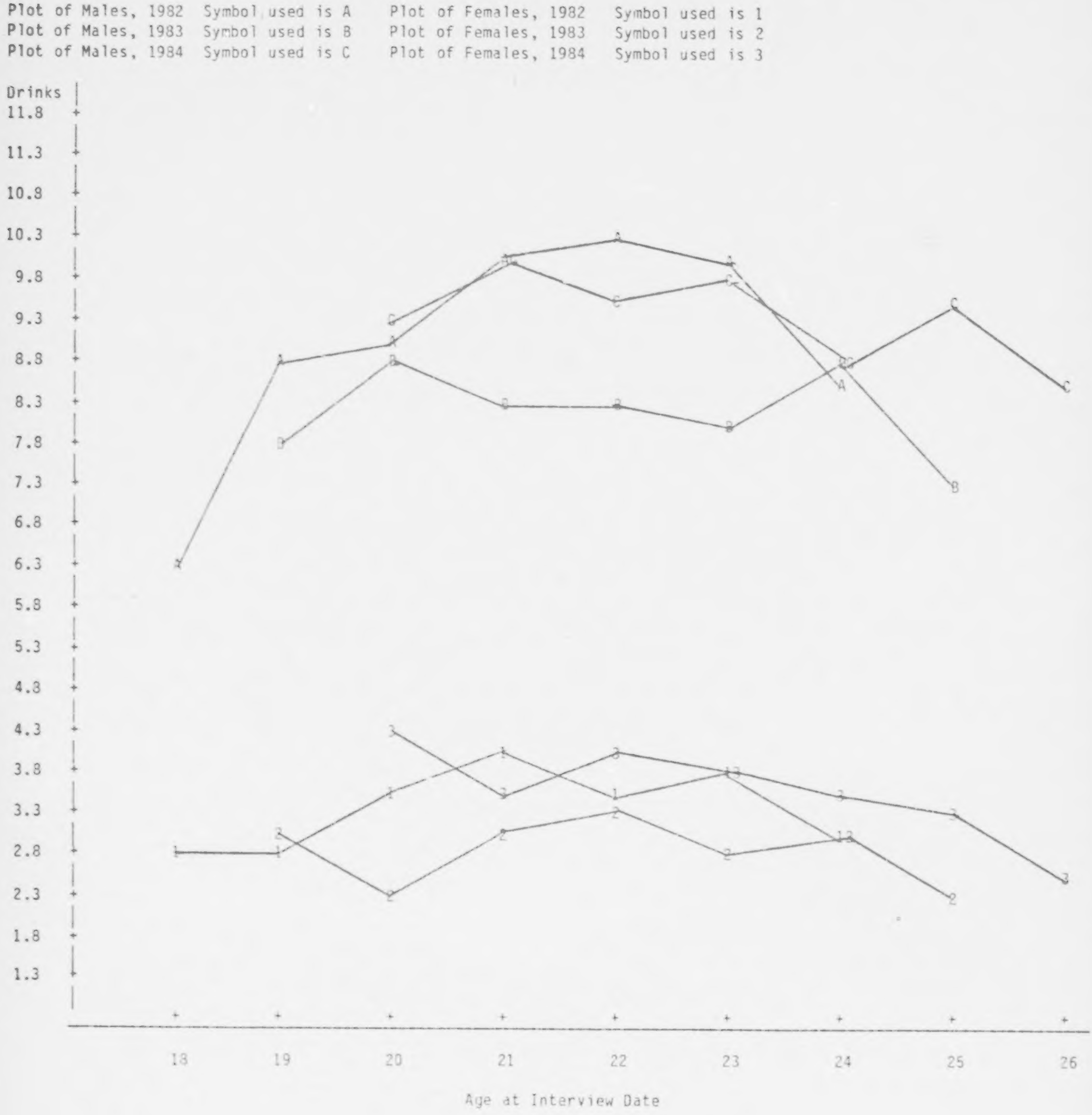
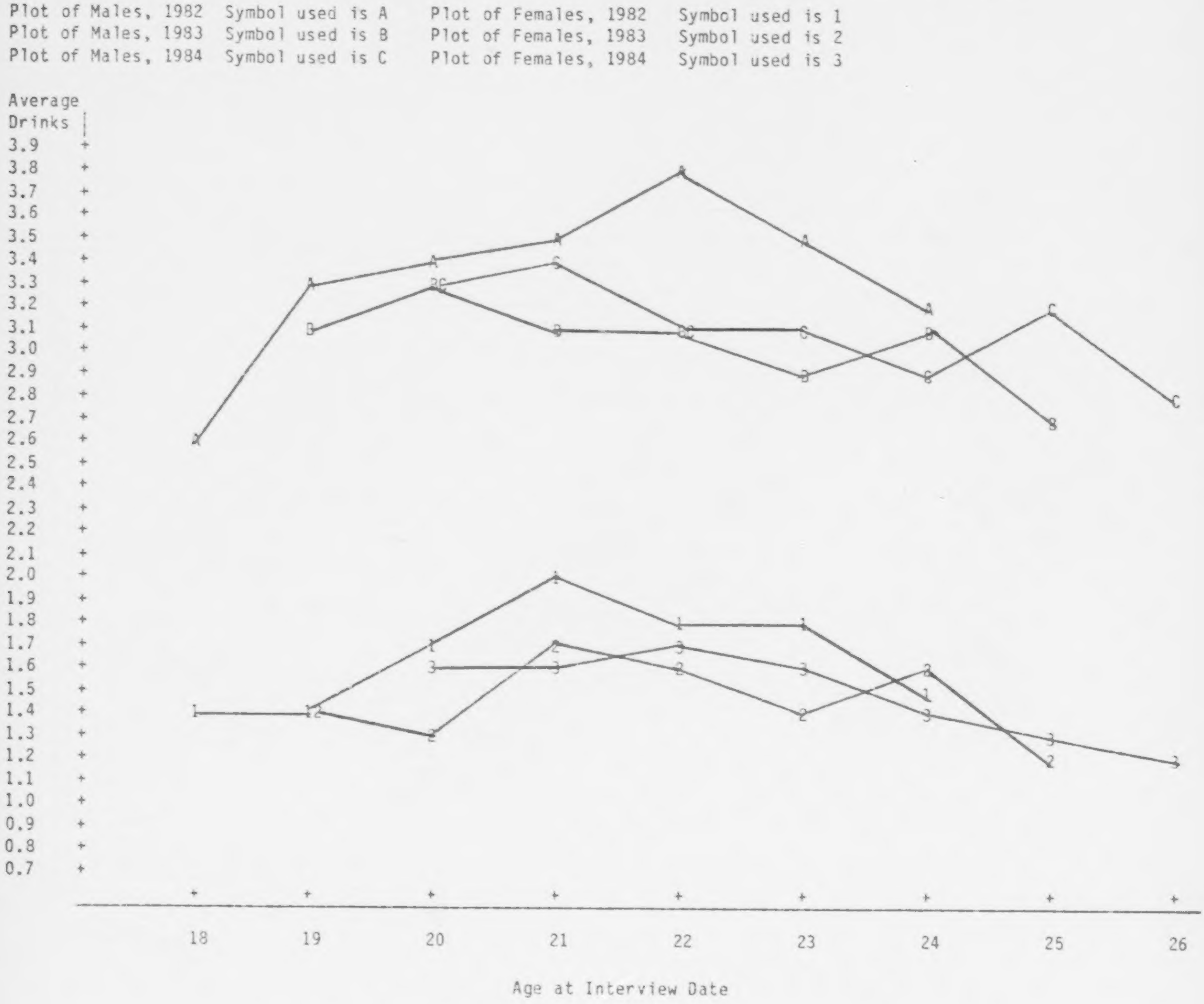


Figure 3: Average Number of Drinks per Drinking Day for Previous Week, by Age, for Each Survey Year



Frequency of alcohol use increases rapidly over the late teen years, then plateaus during the early twenties. The figures for the three years are quite close The quantity of alcohol consumed is fairly flat. Indeed, there is a suggestion that the amount consumed per drinking occasion may decline with age.

Drinking and social status. Table 1 shows the patterns of alcohol consumptions as functions of education, poverty and occupational status, separately for males and females.[3] Following the three-decision strategy outlined above, the first column of each table gives the results of a logit analysis on whether alcohol was or was not used in the previous month. The figures shown in the second and third columns are based on OLS regressions of the frequency and quantity of drinking for youth who reported at least one drink within that period. One striking result of the tables is how little of the variance on each index is accounted for by these variables. Drinking is sensitive to situational factors, so that these broad cultural strata probably are best thought of as associated with constraints and incentives to drink, while the situational and dispositional factors not measured by the NLS may account for more of the actual behavior.

However, several patterns do emerge clearly. Race and dropping out of school, factors usually associated with lower social status, are associated with higher proportions of abstaining, contrary to stereotype but in keeping with previous research (Radosevich, et al., 1980). Being black, a high school dropout, or not working at the time of the interview, are all significantly associated with low probabilities of drinking. However, with the exception of

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[3] Analyses not shown indicated that, while several of the relationships between drinking and status variables significantly interacted with sex, there were no significant interactions by race.

Table 1: Drinking Patterns for the Month Preceding Interview, Multivariate Analysis

	Females			Males		
Independent Variables	Any Drinks	Drink Frequency	Drink Quantity	Any Drinks	Drink Frequency	Drink Quantity
Race						
Black	-.557**	-1.25**	-.620**	-.342**	-1.76**	-.761*
Hispanic	-.364**	-2.02**	-.219*	-.023	-1.83**	.006
White	--	--	--	--	--	--
Age						
19-20	--	--	--	--	--	--
21-22	.151	.084	-.222**	.207*	.449	-.218*
23-24	.163	-.069	-.205**	.255*	.861*	-.258**
25-27	.103	.227	-.402**	.208*	.692	-.395**
Education and Enrollment						
Less than 12 years	-.169	1.01**	.511**	-.193*	.713	.377**
12 years	--	--	--	--	--	--
13-15 years	.355**	.165	-.395**	.079	.559	-.172*
16 or more years	.692**	1.13**	-.381**	.231	.258	-.359**
Student	.578**	.057	-.306**	-.140	-1.50**	-.327**
Poverty status	.204**	.251	.139*	-.222*	-.047	.163*
Occupational Status						
White collar	--	--	--	--	--	--
Blue collar	.046	.098	-.228**	.091	.058	-.234**
Not working	-.352**	-1.26**	-.233**	-.288*	-.333	.035
Constant	.567**	5.72	3.213**	1.416**	9.63	3.676**
R^2 (adj)		.02	.08		.01	.07**
F	6.47	24.59		6.62	26.06	
N 5172	3387	3387	5352	4277	4277	
df	292			282		
X^2	401.97			296.28		
Probability	.0001			.27		

minority status, these same factors are associated with high consumption levels among drinkers.

Several factors work differently for men than for women, notably education, poverty status, and occupational status. Among males, although dropouts are less likely to be drinkers than are high school graduates, there are no large differences between men who have a terminal high school degree and those who have attended college. Among women however, higher levels of eduacation are consistently associated with higher probabilities of alcohol use. In particular, drinking is positively associated with student status among women, while men who are students are less likely than high school graduates to drink. Inspection of the raw means for drinking levels shows less differentiation between men and women in their drinking patterns in the more highly educated groups.

For both men and women, high school dropouts who drink are likely to drink more often and in greater quantity than high school graduates. However, while male students drink less often than other men, female students drink about as frequently as do high school graduate women. For both men and women, respondents with higher levels of education tend to report lower quantities of alcohol consumption per occasion.

Poverty status strongly interacts with sex in its relationship with drinking. Poor men are less likely to drink than non-poor men, while among women, the relationship is reversed. For both men and women, persons in poverty who drink report higher quantities consumed than do the non-poor.

Occupational status was defined according to whether the occupation of the job held at the time of the interview was white collar or blue collar or whether the respondent was not working during the previous week. Contrary to the stereotype of the hard-drinking blue collar worker, it is actually the white collar workers who are most likely to drink, and blue collar workers report lower average quantities consumed within the drinking population. Note that, while both men and women fall into the non-work category due to school or unemployment, for women the not-working class also includes a substantial number of women engaged in home care.

PROBLEM DRINKING

Measurement Table 2 shows the questions on problems resulting from alcohol use. Factor analysis confirmed the presence of three separate scales. The table indicates the items in each scale, along with the reliability for the scales and the item-total correlations.[4] The first scale consists of items indicating aggressive behavior under the influence of alcohol. The second scale includes reports of loss of control over drinking and solitary drinking. Loss of control over alcohol consumption is considered a factor in the diagnosis of alcoholism (Clark and Cahalan, 1977). The third scale, restricted to youth who had worked within the past year, focuses on problems on the job associated with drinking.

Table 3 shows the correlations among the alcohol problem indexes and the alcohol quantity measures. While aggression and control problems are clearly related, both to each other and to levels of alcohol consumption, problems at work are show much lower correlations with the other indexes. The low correlations between work problems and the other indexes is due in part to the

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[4] Item total correlations indicate the correlation of each item in the scale with the sum of the remaining scale items. The statistic helps indicate how well each item fits with the others, without the inflation which would result from correlating the item with the full scale including the item itself. The reliability coefficient indicates the degree to which respondents tend to respond similarly to each scale item. Alpha is generally a conservative estimate of reliability. Item total correlations and reliabilities were calculated using the Reliability program of SPSS-X.

Table 2: Reliability Analysis for Problem Drinking Scales[a]

Now I would like to ask you some questions about experiences that many people have had with drinking. During the past year . . .	Percent Reporting Problem	Item-Total Correlation	Scale Mean (Alpha)
Alcohol-related aggression[b]			.587 (.711)
Have you felt aggressive or while drinking?	18	.519	
Have you gotten into a heated argument while drinking?	17	.602	
Have you gotten into a fight while drinking?	8	.481	
Have you awakened the next day not being able to remember things you had done while drinking?	15	.397	
Loss of control[b]			.397 (.608)
Were you afraid you might be an alcoholic or that you might become one?	7	.366	
Once you started drinking, was it difficult for you to stop before you became completely intoxicated?	6	.349	
Have you often taken a drink the first thing when you got up in the morning?	3	.273	
Have your hands shaken a lot the morning after drinking?	4	.305	
Have you sometimes gotten high or tight when drinking by yourself?	12	.341	
Have you sometimes kept on drinking after promising yourself not to?	9	.421	
Alcohol-related work problems[c]			.119 (.824)
Have you stayed away from work because of a hangover?	4	.440	
Have you gotten high or tight when on the job?	4	.440	
Have you lost a job, or nearly lost one, because of drinking?	2	.684	
Has drinking led to your quitting a job?	1	.702	
Has drinking hurt your chances for promotions or raises or a better job?	1	.696	

[a] All items report problems for the past year.
[b] Universe: Respondents who drank in month prior to interview date (N=8273).
[c] Universe: Respondents who worked in past year (N=7084).

Table 3: Correlations between Drinking Levels and Problem Drinking Scales

	1	2	3	4	5	6
1. Aggression Problems	1.00	0.45	0.13	0.26	0.36	0.32
	0.00	0.00	0.00	0.00	0.00	0.00
	8285	8285	6779	8285	8285	8285
2. Control Problems		1.00	0.19	0.22	0.32	0.25
		0.00	0.00	0.00	0.00	0.00
		8285	6779	8285	8285	8285
3. Work Problems			1.00	0.05	0.09	0.05
			0.00	0.00	0.00	0.00
			6780	6780	6780	6780
4. Total Number Days R Drank Alcohol In Last Month				1.00	0.86	0.16
				0.00	0.00	0.00
				8294	8293	8293
5. Total Number Drinks In Last Month, 1984					1.00	0.48
					0.00	0.00
					8293	8293
6. Average Quantity Consumed per Day of Drinking						1.00
						0.00
						8293

Pearson Correlation Coefficients
Prob > R under H0:RHO=0
Number of Observations

Universe: Respondents reporting at least one drink in the past month.
Universe: Repondents employed during previous week, who had at least one drink in the past month.

distribution; even among youth who were employed, very few report any problems on the job due to alcohol. Fewer than six percent of all respondents reported work-related problems with alcohol. In contrast, over one fourth of the youth reported problems with aggressiveness while drinking, and another fifth report some instance of loss of control over alcohol.

While each problem area produced a multi-point scale, the distributions were quite skewed, as expected. For analysis purposes, the scales were dichotomized based on whether or not a respondent reported any problems in a given problem list. The proportions of youth reporting drinking problems are shown in Table 4, both for the entire population and for the subpopulation of people who drank in the past month. Most of the relationships are significant, although the significance levels are low relative to the sample size for reports of work problems.

In line with their higher use of alcohol, males report more problems as a result of drinking than do females. Aggressive behavior under the influence of alcohol is reported more frequently by whites, as would be expected from their higher levels of consumption. Among males, minorities, particularly blacks are more likely than whites to report problems of loss of control over drinking. Within sex group, there is little variation by race in reports of work related problems.

Age, somewhat surprisingly, shows little relationship with problem drinking, except for problems with alcohol-related aggression, which generally decline with age.

More educated respondents are less likely to report drinking problems. The most dramatic difference is between high school dropouts and high school graduates. Among drinkers, high school dropouts are 25 to 50 percent more likely to report drinking-related problems than are terminal high school graduates.

Table 4: Drinking Problems by Selected Characteristics

Characteristic	Type of Problem					
	Aggression		Loss of Control		Workplace	
	% Problem		% Problem		% Problem	
	All Respondents	Drinkers Only	All Respondents	Drinkers Only	All Respondents	Drinkers Only
Total Sample	26	34	19	25	6	8
Sex and Race						
Hispanic Males	25**	31**	27**	34**	7**	8**
Black Males	23	31	3	42	7	10
White Males	35	42	24	29	8	9
Hispanic Females	1	18	9	15	3	5
Black Females	9	17	11	20	2	4
White Females	20	27	13	18	4	5
Age						
19	30*	39**	19	25	5	6
20	29	40	2	27	5	7
21	27	34	19	24	6	8
22	26	34	19	24	6	8
23	27	35	20	26	6	8
24	23	31	21	28	5	7
25	23	30	18	24	6	8
26	21	29	17	23	7	9
27	20	27	14	19	5	7
Education and Enrollment Status						
Less than 12 years	30**	44**	27**	39**	8**	13**
12 years	25	35	19	26	6	8
13-15 years	23	30	18	23	5	7
16 or more years	21	26	14	17	4	5
Student	26	31	16	20	4	5
Poverty Status						
Nonpoor	25	33**	18**	24**	6	8*
Poor	26	27	22	31	5	8
Occupational Status						
White Collar	30**	39**	23**	29**	7**	9**
Blue Collar	22	28	15	19	5	6
Not Employed	20	35	19	30	--	--

** Chi Square probability < .01
* Chi Square probability < .05

Poverty status shows an inconsistant relationship with drinking problems. The non-poor are more likely to report problems with aggressiveness, while the poor are more likely to report control problems. The pattern parallels the pattern for race.

Contradicting the stereotype of the hard-drinking blue collar worker, the table shows that white collar workers report higher levels of drinking problems than blue collar workers, however problems are defined.

Multivariate analysis. Of course, all of these status indicators are intercorrelated. As a first cut at untangling the knots, logit regressions were run, using two models.[5] The first used the status indicators only, the second added terms for the quantity and frequency of alcohol use. The analysis was restricted to youth who reported at least one drink in the past month, so the interpretation of the results should focus on variations in problem drinking within the drinking population.

As with the analysis of drinking patterns, contrasted with the large sample size, the results show that these status constructs account for relatively little of the variance in drinking problems. The results for problems at work, in particular, indicate that despite the significance of individual parameters, the overall result does not reach conventional levels of acceptable significance. These results are presented, but not discussed further.

As Tables 5 and 6 show, controlling on the frequency of drinking and the amount of alcohol consumed on a average drinking day does not substanatially change the results. Results for men and women are roughly similar, but only the results for aggression problems are significant for the women. Minority

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[5] OLS regressions were also run, and showed quite similar results. Dichotomizing the variables seems not to lose much information in this case, and avoids problems with normality assumptions with clearly non-normal data.

Table 5: Drinking Problems by Socioeconomic Status for Males

	Aggression		Control		Work	
	Drinking Controls	Status Indexes Only	Drinking Controls	Status Indexes Only	Drinking Controls	Status Indexes Only
Constant	-2.14**	-.111	-2.47**	-.828**	-3.69**	-2.50**
Race						
Black	-.309**	-.613**	.721**	.391**	.131	-.090
Hispanic	-.420**	-.487**	.123	.052	-.167	-.201
White	--	--	--	--	--	--
Age						
19-20	--	--	--	--	--	--
21-22	-.192	-.669	-.214*	-.187	.346	.346
23-24	-.229*	-.185	.052	.078	.322	.363
25-27	-.298**	-.333**	-.003	-.039	.424*	.421*
Education and Enrollment						
Less than 12 years	.136	.281**	.469**	.563**	.304*	.404
12 years	--	--	--	--	--	--
13-15 years	-.056	-.112	-.019	-.070	-.134	-.187
16 or more years	-.186	-.300*	-.263	-.359*	-.460	-.551*
Student	-.047	-.242*	-.342**	-.488**	-.581**	-.700**
Poverty Status	.260*	.259*	.337**	.332**	.134	.162
Occupational Status						
White Collar	--	--	--	--	--	--
Blue Collar	-.103	-.192*	-.050	-.128	.043	-.015
Not Working	.151	.100	.200*	.165	--	--
Alcohol Use Quantity	.397**		.307**		.217**	
Frequency	.063**		.051**		.037**	
N 4275	4275	4275	4275	3593	3593	
df	3183	272	3183	272	2580	189
χ^2	3809	312	3741	308	1680	185
Probability	.00**	.05*	.00**	.07	1.00	.57

Table 6: Drinking Problems by Socioeconomic Status for Females

	Aggression		Control		Work	
	Drinking Controls	Status Indexes Only	Drinking Controls	Status Indexes Only	Drinking Controls	Status Indexes Only
Constant	-2.31	-.665**	-3.11**	-1.45**	-4.36	-2.78**
Race						
Black	-.550**	-.795**	.259*	-.055	-.001	-.295
Hispanic	-.411**	-.570**	-.185	-.361*	.170	-.011
White	--	--	--	--	--	--
Age						
19-20	--	--	--	--	--	--
21-22	-.190	-.215	.079	.032	.150	.075
23-24	-.053	-.098	.205	.143	.127	.063
25-27	-.258	-.315*	.176	.086	.280	.171
Education and Enrollment						
Less than 12 years	.059	.259*	.201	.395**	-.304	-.075
12 years	--	--	--	--	--	--
13-15 years	.087	-.022	-.084	-.180	-.447	-.562
16 or more years	-.159	-.233	-.388*	-.446*	-.300	-.411
Student	-.055	-.195	-.048	-.209	-.022	-.196
Poverty Status	.140	.181	.276*	.305**	.025	.086
Occupational Status						
White Collar	--	--	--	--	--	--
Blue Collar	-.180	-.208*	-.219	-.242	.001	-.056
Not Working	-.123	-.187	-.034	-.093	--	--
Alcohol Use						
Quantity	.362**		.351**		.341**	
Frequency	.083**		.087**		.059**	
N 3383	3383	3383	3383	2704	2704	
df	2329	276	2329	276	1777	186
χ^2	2507	270	2219	309	815	165
Probability	.005*	.586	.948	.086	1.000	.86

youth are less likely than whites to report aggressive episodes while drinking, but more likely to report a loss of control over their alcohol use. Actually, since blacks drink less than whites, controlling for alcohol consumption levels actually increases the association between race and control problems.

As observed in the descriptive table, alcohol-related aggression reduces with age. On the other hand, work problems are significantly positively associated with age, a result which was not indicated earlier. The age result may be affected by the inclusion of educational status, since the upper levels of education are out of reach of most of the younger members of the sample.

By and large, the pattern of declining alcohol problems with higher levels of education holds for the multivariate analysis as well as the cross-tabular table. Adding the drinking measures makes a substantive difference in results only for aggression problems, which are no longer strongly differentiated by educational status.

Contrary to the bivariate results, poverty is positively associated with drinking problems, once other factors, including drinking levels, are controlled. At least for aggression, the overrepresentation of blacks among the poor may suppress the relationship between poverty and drinking related problems, since relatively few blacks report such problems.[6]

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[6] This interpretation is supported by analyses not show here which demonstrate that the coefficient for poverty is much smaller when race is omitted from the model.

CONCLUSIONS

Clearly, alcohol use is not well accounted for by broad socioeconomic categories. Several issues are suggested by the analysis. The first is th problem of refining the measure of drinking behavior. The categorical approach presented in the previous report (Crowley, 1985) have the advantage of describing variations in quantity and frequency of use simultaneously. On the negative side, there is little basis for external validation of the selected categories, and interpretation of appropriate multivariate statistics such as multinomial regression and log linear analysis can be tortuous.

Conversely, the individual quantity and frequency indexes used in this report can be analysed using a variety of well-established techniques. The disadvantage is that the multiple analyses are not really independent, and given the differences in scaling and measurement properties contrasts between effect sizes may be difficult to interpret with confidence.

Whichever strategy is used, clearly both quantity and frequency of drinking are distinct dimensions of drinking behavior, and the distinction must be respected in the interpretation of results.

Substantively, perhaps the most important result is the relationship between race and drinking problems. Blacks have a higher prevalence of cirrhosis than do whites, and yet among the NLS respondents they report lower levels of alcohol consumption by any measure used. At the same time, blacks are significantly more likely than whites to report problems with control over drinking behavior. Whether the lack of control indicates socially learned behavior or some differential distribution of physical response to alcohol as a drug is, of course, impossible to determine from the available information.

Beyond the issues of measurement and analysis of drinking behavior, this analysis points up the importance of going beyond consumption measures to include measures of the consequences of alcohol use. Drinking quantity and frequency are, of course, almost tautologically related to drinking problems, and any results which suggested the contrary would have to be considered suspect. However, few conclusions regarding the patterns which were observed in the relationship between status variables and drinking problems were affected by the inclusion of drinking behavior in the models. Even with these fairly weak predictors, it is clear that alcohol related problems are not simply a function of alcohol consumption. Continued assessment of both drinking behavior and drinking consequences will produce a more sophisticated grasp of the functions of alcohol use than could be obtained with either alone.

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Appendix I: Mean Characteristics by Sex, Age and Interview Year

Table A1: Mean Number of Days Drank in the Previous Week, by Sex, Age and Interview Year

Age	Males			Females		
	1982	1983	1984	1982	1983	1984
17	0.79		--	0.43	--	--
18	1.15	1.11	--	0.77	0.74	--
19	1.60	.144	1.54	0.86	0.81	0.91
20	1.60	1.67	1.59	0.91	0.78	0.87
21	1.86	1.77	1.81	1.06	0.87	0.90
22	1.92	1.78	1.79	0.99	0.97	0.95
23	2.02	1.81	1.90	1.04	0.91	1.00
24	1.81	2.06	1.77	0.97	0.96	0.90
25	2.42	1.78	1.84	0.81	0.82	0.99
26	--	1.93	1.85	--	0.54	0.87
27	--	--	1.94	--	--	0.65

Table A2: Mean Number of Drinks in the Previous Week, by Sex, Age, and Interview Year

	Males			Females		
Age	1982	1983	1984	1982	1983	1984
17	4.42	--	--	1.34	--	--
18	6.29	5.80	--	2.82	2.92	--
19	8.70	7.81	9.24	2.88	2.93	3.99
20	9.04	8.79	9.42	3.54	2.36	4.19
21	10.06	8.30	10.06	3.95	3.05	3.51
22	10.36	8.33	9.65	3.48	3.41	4.00
23	10.01	8.10	9.78	3.72	2.87	3.83
24	8.44	8.73	8.71	2.97	2.93	3.48
25	12.10	7.26	9.45	2.28	2.25	3.28
26	--	9.84	8.63	--	1.49	2.64
27	--	--	8.87	--	--	1.75

Table A3: Mean Number of Drinks Per Day in the Previous Week, by Sex, Age and Interview Year

Age	Males			Females		
	1982	1983	1984	1982	1983	1984
17	2.21	--	--	0.80	--	--
18	2.55	2.61	--	1.37	1.42	--
19	3.33	3.07	3.10	1.44	1.36	1.71
20	3.41	3.28	3.29	1.73	1.35	1.63
21	3.51	3.06	3.37	2.03	1.73	1.61
22	3.80	3.08	3.08	1.78	1.62	1.72
23	3.53	2.89	3.14	1.79	1.41	1.57
24	3.22	3.11	2.95	1.48	1.56	1.38
25	3.84	2.70	3.18	1.13	1.19	1.27
26	--	3.11	2.82	--	0.79	1.18
27	--	--	3.10	--	--	0.93

DECK 52

APPENDIX 2

1984 Survey Instrument: Alcohol Use Section

SECTION 13: ALCOHOL USE

1. Next I'd like to ask you some questions about drinking alcoholic beverages, including beer, wine, and liquor. Have you ever had a drink of an alcoholic beverage?

Yes	1	41/
No .... (SKIP TO Q.15)	0	

---

2. Have you had any alcoholic beverages, including beer, wine, or liquor, during the last 30 days?

Yes .... (GO TO Q.3)............	1	42/
No .... (ASK A AND B)	0	

A. Has drinking ever interfered with your school work?

Yes	1	43/
No	0	

B. Has drinking ever interfered with your work on a job?

Yes	1	44/
No	0	

SKIP TO Q.15

---

3. How often have you had 6 or more drinks on one occasion during the last 30 days? Would you say it was .... (READ CATEGORIES) ....?

HAND CARD JJ

10 or more times	6	45/
8 or 9 times	5	
6 or 7 times	4	
4 or 5 times	3	
2 or 3 times	2	
Once	1	
Never	0	

4. During the last 30 days, on how many days did you drink any alcoholic beverages, including beer, wine, or liquor?

ENTER # OF DAYS: ☐☐ 46-47/

---

5. Of the (NUMBER OF DAYS IN Q. 4) days you mentioned, on how many of those days did you have only 1 drink? On how many of those days did you have only 2 drinks? (REPEAT QUESTION FOR ALL CATEGORIES AS NECESSARY)

HAND
CARD
KK

. . .only 1 drink?	ENTER # OF DAYS:	☐☐	48-49/
. . .only 2 drinks?	ENTER # OF DAYS:	☐☐	50-51/
. . .only 3 drinks?	ENTER # OF DAYS:	☐☐	52-53/
. . .only 4 drinks?	ENTER # OF DAYS:	☐☐	54-55/
. . .only 5 drinks?	ENTER # OF DAYS:	☐☐	56-57/
. . .6 or more drinks?	ENTER # OF DAYS:	☐☐ +	58-59/
TOTAL # OF DAYS =		☐☐	60-61/

A. INTERVIEWER: DOES TOTAL # OF DAYS OF Q. 5 = # OF DAYS IN Q. 4?

YES.................................. 1

NO...(RECHECK Q.4 AND Q.5 WITH R).... 0

---

6. How often in the last 30 days did you go to bars, taverns, or cocktail lounges? Did you go ... (READ CATEGORIES) ...? (INTERVIEWER: DO NOT INCLUDE RESTAURANTS)

HAND
CARD
LL

Almost every day	5	62/
Several times a week	4	
Once or twice a week	3	
2-3 times during the month	2	
Once this month	1	
Never	0	

---

7. During the last 30 days, on how many days have you had a hangover that interfered with your activities the next day?

ENTER # OF DAYS: ☐☐ 63-64/

Never 00

Next, I'd like some information about drinking alcoholic beverages, including beer, wine, and liquor, during the past week.

8. During the last seven days ending with yesterday, on how many days did you drink alcoholic beverages?

1 day	01	65-66/
2 days	02	
3 days	03	
4 days	04	
5 days	05	
6 days	06	
7 days	07	
None ....(SKIP TO Q. 12)	00	

---

9. During the last seven days, how many cans or bottles of beer did you have?

ENTER NUMBER OF CANS OR BOTTLES:	|__|__|	67-68/
None	00	

---

10. During the last seven days, how many glasses of wine did you have?

ENTER NUMBER OF GLASSES:	|__|__|	69-70/
None	00	

---

11. During the last seven days, how many drinks did you have containing liquor, such as whiskey, vodka, gin, brandy, etc.?

ENTER NUMBER OR DRINKS:	|__|__|	71-72/
None	00	

12. A. Has drinking ever interfered with your school work?

Yes	1	73/
No	0	

B. Has drinking ever interfered with your work on a job?

Yes	1	74/
No	0	

13. Now I would like to ask you some questions about experiences that many people have had with drinking. During the past year . . .

		YES	NO	
A.	Have you felt aggressive or cross while drinking?	1	0	75/
B.	Have you gotten into a heated argument while drinking?	1	0	76/
C.	Have you gotten into a fight while drinking?	1	0	77/
D.	Have you deliberately tried to cut down or quit drinking, but didn't manage to do so?	1	0	78/
E.	Were you afraid you might be an alcoholic or that you might become one?	1	0	79/
			BEGIN DECK 53	
F.	Once you started drinking, was it difficult for you to stop before you became completely intoxicated?	1	0	10/
G.	Have you awakened the next day not being able to remember things you had done while drinking?	1	0	11/
H.	Have you often taken a drink the first thing when you got up in the morning?	1	0	12/
I.	Have your hands shaken a lot the morning after drinking?	1	0	13/
J.	Have you sometimes gotten high or tight when drinking by yourself?	1	0	14/
K.	Have you sometimes kept on drinking after promising yourself not to?	1	0	15/

---

4 INTERVIEWER: HAS R WORKED IN THE PAST YEAR (HAVE LINES BEEN DRAWN IN ROWS A OR B OF THE **CALENDAR**)?

Yes .... (ASK A-E) 1 16/

No .... (GO TO Q.15) 0

A.	Have you stayed away from work because of a hangover?	1	0	17/
B.	Have you gotten high or tight when on the job?	1	0	18/
C.	Have you lost a job, or nearly lost one, because of drinking?	1	0	19/
D.	Has drinking led to your quitting a job?	1	0	20/
E.	Has drinking hurt your chances for promotion or raises or a better job?	1	0	21/

---

5. INTERVIEWER: WAS ANYONE ELSE PRESENT OTHER THAN SMALL CHILDREN WHEN YOU ASKED THE QUESTIONS IN SECTION 13?

YES 1 22/

NO 0

PHONE INTERVIEW 2

The Center has also been active in manpower planning both in the U.S. and in the developing countries. A project for the Ohio Advisory Council for Vocational Education identified the highly fragmented institutions and agencies which supply vocational and technical training in Ohio. Subsequent projects for the Ohio Occupational Information Coordinating Committee have followed graduates of these programs. These data and information on occupational distributions of employers collected for the Occupational Employment Statistics Program are being integrated into a comprehensive planning model which will be accessible to trainees and employers and linked to a national network.

Another focus of the Center's research is industrial relations and collective bargaining. In a project for the U.S. Department of Labor, staff members are working with unions and management in a variety of industries to evaluate several current experiments for expedited grievance procedures. The procedural adequacies, safeguards for due process, and cost and timing of the new procedure are being weighed against traditional arbitration techniques.

Senior staff also serve as consultants to many boards and commissions at the national and state level. Recently the Center's staff have produced papers and prepared testimony for the Department of Labor, the Vice President's Task Force on Youth Unemployment, the Joint Economic Committee of Congress, the National Commission for Employment and Unemployment Statistics, the National Commission for Employment Policy, the White House Conference on the Family, the Ohio Department of Corrections, the Ohio Board of Regents, the Ohio Governor's Task Force on Health, and the Ohio Governor's Task Force on Welfare.

The Center maintains a working library of approximately 10,000 titles, including a wide range of reference works and current periodicals, as well as an extensive microfilm and microfiche collection. Through their facilities linked to the University computer, the Center's data processing staff provide statistical, technical, and programming support both for in-house researchers and the over 250 users of the National Longitudinal Surveys data tapes. They maintain the NLS tapes, data base, documentation, and associated software.

For information on specific Center activities, write: Director, Center for Human Resource Research, 5701 North High Street, Worthington, Ohio 43085.

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Center for Human Resource Research

The Center for Human Resource Research is a policy-oriented multidisciplinary research organization affiliated with The Ohio State University. Established in 1965, the Center is concerned with a wide range of contemporary problems related to developing and conserving human resources. Its more than thirty senior staff members come from disciplines including economics, education, English, health sciences, industrial relations, management science, psychology, public administration, social work, and sociology. This multidisciplinary team is supported by approximately 70 graduate research associates, full-time research assistants, computer programmers, and other personnel.

The Center has become preeminent in the fields of labor market research and manpower planning. With continuing support from the United States Department of Labor, the Center has been responsible since 1965 for the National Longitudinal Surveys of Labor Market Experience. Staff have assisted in population and human resource planning throughout the world, having conducted major studies in Bolivia, Ecuador, Kenya, Sierra Leone, Venezuela, and Zaire. At the request of the National Science Foundation, a review of the state of the art in human resource planning was conducted. Other studies have assessed the impact of labor and education policy on labor supply and evaluated employment statistics collection methods. Senior personnel are also engaged in several other areas of research—collective bargaining and labor relations, evaluation and monitoring of the operation of government employment and training programs, and the projection of health education and facility needs.

The Center for Human Resource Research has received over two million dollars annually from government agencies and private foundations to support its research in recent years. Providing support have been the U.S. Departments of Labor, State, Defense, Education, Health and Human Services; Ohio's Health and Education Departments and Bureau of Employment Services; the Ohio cities of Columbus and Springfield; the Ohio AFL-CIO; the George Gund Foundation; the Rockefeller Foundation; and the Ford Foundation. The breadth of the Center's research interests is best illustrated by a brief review of a few of its current projects.

The Center's largest project is the National Longitudinal Surveys of Labor Market Experience. This project has involved repeated interviews over a fifteen-year period with four groups of the United States population: older men, middle-aged women, and young men and women. The data are collected for 20,000 individuals by the U.S. Bureau of the Census, and the center is responsible for data analysis. Since 1979, the NLS has followed an additional cohort of 13,000 young men and women between the ages of 14 and 21. This cohort includes for the first time those serving in the armed forces at the time of the initial interview. In addition to being the definitive U.S. national data set on the labor market activities of young adults, this continuing survey includes unique batteries of questions on such socially important issues as delinquency, alcohol and drug use, fertility, and prenatal care. For this cohort, field work is handled by the National Opinion Research Center. To date the Center's staff have prepared dozens of research monographs, special reports, and books on the NLS, and they also prepare and distribute data tapes for public use.

The Quality of Work Life Project, another ongoing study, began in 1975 as an attempt to improve the productivity and the meaningfulness of work for public employees in the cities of Springfield and Columbus. Center staff also served as third party advisers and researchers exploring new techniques for attainment of management-worker cooperation and worker health in a number of central Ohio private sector industries.

(Continued on inside back cover)